Draft Tiered Initial Study Checklist and
Proposed Mitigated Negative Declaration
for the

Construction and Operation of the Molecular Foundry

at
Ernest Orlando Lawrence Berkeley National Laboratory
Berkeley, California

University of California

December 2002

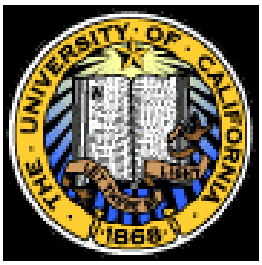


TABLE OF CONTENTS

DRAFT TIERED INITIAL STUDY CHECKLIST AND
PROPOSED MITIGATED NEGATIVE DECLARATION FOR THE PROPOSED CONSTRUCTION AND OPERATION OF
THE MOLECULAR FOUNDRY

		Page
I.	**PROJECT INFORMATION**	**1**
II.	**PROJECT DESCRIPTION**	**2**
III.	**ENVIRONMENTAL REVIEW AND APPROVAL**	**5**
IV.	**ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED**	**7**
V.	**DETERMINATION**	**7**
VI.	**PROJECT DESCRIPTION**	**8**
VII.	**IMPACT QUESTIONS**	**31**
VIII.	**NARRATIVE DISCUSSIONS OF CHECKLIST EVALUATION**	**42**
	1. Aesthetics	42
	2. Agricultural Resources	47
	3. Air Quality	48
	4. Biological Resources	59
	5. Cultural Resources	64
	6. Geology and Soils	66
	7. Hazards and Hazardous Materials	71
	8. Hydrology and Water Quality	75
	9. Land Use and Planning	78
	10. Mineral Resources	82
	11. Noise	82
	12. Population and Housing	88
	13. Public Services	89
	14. Recreation	91
	15. Transportation/Traffic	92
	16. Utilities and Service Systems	98
	17. Cumulative Impacts	101
	18. Mandatory Findings of Significance	105
	19. Summary of Mitigation Measures Applied to Proposed Project	106

Page

LIST OF FIGURES

1	LBNL Location	9
2	Proposed Action Site Location	10
3	Existing Site with Existing Utilities	11
4	Molecular Foundry Footprints with proposed Utilities	12
5	Area of Disturbance for Construction	13
6	Molecular Foundry Site Plan	17
7	Molecular Foundry Elevations	19
8	Molecular Foundry Floor Plans	20
9	Molecular Foundry Floor Plans	21
10	Molecular Foundry Floor Plans	22

LIST OF TABLES

1	Anticipated Molecular Foundry Staff	16
2	Molecular Foundry Building Summary	18
3	Typical Commercial Construction Noise Levels	39
VIII.3a	Ambient Air Quality Standards for Criteria Pollutants Effects and Sources, Parts Per Million or Micrograms per Cubic Meters	51
VIII.3b	Highest 4 Daily Maximum Hourly Ozone Measures and Number of Days Above the Hourly Standards at Oakland (822 Alice Street)	52
VIII.3c	Highest 4 Daily Maximum 8-Hour Carbon Monoxide Averages and Number of Days Above the 8-Hour Standard at Oakland (822 Alice Street)	52
VIII.3d	Highest 4 Daily PM-10 Measurements and Annual PM-10 Statistics at Fremont-Chapel Way Station	53
VIII.3e	Summary of Ozone Data Summaries for the San Francisco Bay Area Air Basin, 1990-2000	53
VIII.9a	City of Oakland Maximum Allowable Receiving Noise Standards for Residential and Civic Land Uses	85
VIII.9b	Construction Noise Measurement Data	86
VIII.15a	Net New Peak-Hour Vehicle Trip Generation Estimate	96

DRAFT TIERED INITIAL STUDY CHECKLIST AND PROPOSED MITIGATED NEGATIVE DECLARATION FOR THE PROPOSED CONSTRUCTION AND OPERATION OF THE MOLECULAR FOUNDRY

UNIVERSITY OF CALIFORNIA December 2002
LAWRENCE BERKELEY NATIONAL LABORATORY

I. PROJECT INFORMATION

1.	Project title:	CONSTRUCTION AND OPERATION OF THE MOLECULAR FOUNDRY
2.	Lead agency name and address:	UNIVERSITY OF CALIFORNIA LAWRENCE BERKELEY NATIONAL LABORATORY One Cyclotron Road Berkeley, CA 94720
3.	Contact person and phone number:	Jeff Philliber LBNL Environmental Planning Coordinator Telephone: (510) 486-5257
4.	Project location:	University of California Lawrence Berkeley National Laboratory Alameda County [City of Oakland[1]]
5.	Project sponsor's name and address:	University of California Lawrence Berkeley National Laboratory One Cyclotron Road Berkeley, CA 94720

6. Custodian of the administrative record for this project (if different from response to item 3 above.): Same as Item No. 3 above.

[1] Lawrence Berkeley National Laboratory straddles the border between the cities of Berkeley and Oakland. The location of the proposed project is within the Oakland city limits.

7. Identification of previous EIRs relied upon for tiering purposes (including all applicable LRDP and project EIRs) and address where a copy is available for inspection.

   Lawrence Berkeley National Laboratory, *Site Development Plan EIR*, August 1987 (State Clearinghouse No. [19]85112610).

   Lawrence Berkeley National Laboratory, *Proposed Renewal of the Contract between the United States Department of Energy and The Regents of the University of California for Operation and Management of the Lawrence Berkeley National Laboratory,* Supplemental EIR, September 1992 (State Clearinghouse No. [19]91093068).

   Lawrence Berkeley National Laboratory, *Proposed Renewal of the Contract between the United States Department of Energy and The Regents of the University of California for Operation and Management of the Lawrence Berkeley National Laboratory*, Supplemental EIR Addendum, September 1997 (State Clearinghouse No. 91093068).

   Copies of these documents can be reviewed at:

   Berkeley Public Library – Central Library
   2090 Kittredge Street
   Berkeley, CA 94704

   Or, contact:

   Lawrence Berkeley National Laboratory
   One Cyclotron Road
   Berkeley, CA 94720
   Attn: Jeff Philliber
   Telephone: (510) 486-5257

II. PROJECT DESCRIPTION

1. Description of project: (Describe the whole action involved, including but not limited to physical characteristics, site, later phases of the project, and any secondary, support, or off-site features necessary for its implementation and site selection process. Attach additional sheets if necessary.)

   See attached Project Description.

2. Project Objectives:

   The Proposed Project would support the research mission of the University of California by providing an interdisciplinary environment and consolidated state-of-the-art facilities for nano-scale scientific, engineering, and technological research. This research deals with the understanding, manipulation, and manufacture of chemicals, structures, and other materials at the molecular or near-molecular level.

   The Molecular Foundry laboratories would be user facilities, designed to attract scientists from

universities, industry, and government laboratories worldwide. This combination of advanced equipment, collaborative staff, and breadth across disciplines would allow users to explore the frontiers of nanoscience.

By functioning as a "portal" to LBNL's established major user facilities, the Foundry would also leverage existing nanoscience research capabilities at the Advanced Light Source, the National Center for Electron Microscopy, and the National Energy Research Scientific Computing Center. Furthermore, the project would provide significant educational and training opportunities for students and postdoctoral fellows as the "first true generation" of nanoscientists.

The new building, with its state-of-the-art laboratories, would include modern safety features and design and would incorporate environmentally-sensitive features.

3. Surrounding land uses and environmental setting: Briefly describe the project's surroundings:

See attached Project Description.

4a. Discretionary approval authority and other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

Agency	Approval or Permit
U.S. Department of Energy	NEPA Lead Agency project approval and funding approval, adoption of Mitigated Environmental Assessment and FONSI
University of California, and The Regents of the University of California	CEQA Lead Agency adoption of Tiered Mitigated Initial Study and Mitigated Negative Declaration and project design approval
Bay Area Air Quality Management District (BAAQMD)	Emergency Generator Permit (Authority to Construct and Permit to Operate)[1]; Point Source Emission Permit, if necessary[2]
State Water Resources Control Board / Regional Water Quality Control Board	Stormwater Construction Notice of Intent (NOI)[3]

[1] Project would include a 750-kilowatt diesel-powered emergency generator.

[2] The need for a Point Source Emission Permit would be determined by the BAAQMD, based on the needs of individual researchers who would eventually occupy the Molecular Foundry lab spaces.

[3] Stormwater construction notifications are necessary for construction sites larger than one acre; the Molecular Foundry site is approximately two and one-half acres. The NOI must include information about preparing a construction Stormwater Pollution Prevention Plan (SWPPP) and associated best management practices.

4b. Public agencies that may require notification regarding the project or project-related modification to existing permits:

Agency	Approval or Permit
State Water Resources Control Board / Regional Water Quality Control Board	Update of current Stormwater Pollution Prevention Plan (SWPPP), if necessary
East Bay Municipal Utility District	Wastewater Discharge Permit (current site-wide permit adequate; letter notification of change in operations would be needed)

5. Consistency with the LRDP: (Describe the project's consistency with: the scope of development projected in the LRDP; campus and community population levels projected in the LRDP; LRDP designation for this type of project; and applicable policy objectives and goals of the LRDP).

The Regents of the University of California approved a Long-Range Development Plan (LRDP) for LBNL in 1987. While this Plan and its accompanying EIR anticipate development to an unspecified year ("20XX"), the Addendum to the Supplemental site-wide EIR adopted in 1997 analyzes LRDP-related buildout impacts through a Contract extension year of 2007.

The LRDP anticipates that growth on the main LBNL site could increase from approximately 1.59 million gross square feet (gsf) in 1987 to approximately 2.0 million gsf at build-out. There are currently about 233,500 gsf available for development under this projection. The proposed Molecular Foundry building and accompanying Central Utility Plant building would comprise approximately 94,500 gsf, which would leave approximately 140,000 gsf remaining below the level proposed in the 1987 LRDP, and analyzed in the LRDP EIR, as amended.

The LRDP projects an increase in total population growth at LBNL from approximately 2,850 in 1987 to approximately 4,750 at buildout.[2] LBNL is currently about 400 people below its anticipated population at buildout. The proposed Molecular Foundry would add approximately 140 staff, students, and visitors to LBNL, which would leave LBNL approximately 260 persons below the population level at buildout proposed in the 1987 LRDP, and analyzed in the LRDP EIR, as amended.

The Proposed Project is consistent with land use designations, goals, and objectives set forth under the LRPD and considered and approved by The Regents. The LRDP designates the proposed project site for a scientific building, and designates the general area of the proposed site as partially developed "open space." The project would site the Molecular Foundry building in this location between two existing buildings and would surround it with open space features as prescribed in the LRDP. A portion of the proposed Molecular Foundry building would also be in a "buffer zone" area as identified in the LRDP. The LRDP does not prohibit new buildings in buffer zones, but encourages design that addresses, enhances and/or upholds special constraints and amenities on such sites.

[2] The portion of the LBNL population identified as being located on the UC Berkeley Campus actually circulates regularly between Campus and LBNL main site facilities. Consequently, it cannot be precisely determined how much of the LBNL staff is on-site, on the UC Berkeley Campus, and off-site at any given time. For this reason, aggregate or total rather than site-specific population figures are used for planning purposes to avoid population undercounting.

The Proposed Project affirms and is consistent with the LRDP Goals and Objectives approved by The UC Regents. The site is adjacent to both utility corridors and traffic/transit corridors. All support services have adequate capacity to serve the new building at this location. The Proposed Project is consistent with the LRDP's Design Guidelines as approved by The UC Regents.

Based on the consistency of the Proposed Project with the LRDP Goals and Objectives, and based on the fact that the Proposed Project would be within the space and population projections presented in the 1987 LRDP EIR, as amended, the Proposed Project is within the scope of the LRDP as evaluated in the LRDP EIR, as amended.

III. ENVIRONMENTAL REVIEW AND APPROVAL

1. Tiering from LRDP EIR, as Amended

This environmental analysis is a tiered Initial Study and proposed Mitigated Negative Declaration (IS/MND) for the proposed Molecular Foundry project (Proposed Project). The IS/MND is tiered from the following three programmatic, site-wide CEQA documents:

- *Site Development Plan* EIR, August 1987 (State Clearinghouse No. [19]85112610);
- *Proposed Renewal of the Contract between the United States Department of Energy and The Regents of the University of California for Operation and Management of the Lawrence Berkeley National Laboratory,* Supplemental EIR, September 1992 (State Clearinghouse No. [19]91093068); and
- *Proposed Renewal of the Contract between the United States Department of Energy and The Regents of the University of California for Operation and Management of the Lawrence Berkeley National Laboratory*, Supplemental EIR Addendum, September 1997 (State Clearinghouse No. [19]91093068).

These documents are referred to herein as the "LRDP EIR, as amended."

The Proposed Project IS/MND is tiered from the LRDP EIR, as amended, in accordance with Sections 15152 and 15168 of the CEQA *Guidelines*, and Public Resource Code Section 21094. The LRDP EIR, as amended, is a Program EIR, prepared pursuant to Section 15168 of the CEQA Guidelines (Title 14, California Code of Regulations, Sections 15000 et seq.). The LRDP EIR, as amended, analyzes full implementation of uses and physical development proposed under the 1987 LRDP through the year "20XX," which is an indeterminate horizon year flexibly projected to occur within the current century. Measures are identified in the LRDP EIR, as amended and adopted by The UC Regents, to mitigate the significant adverse project and cumulative impacts associated with that growth.

The CEQA concept of "tiering" refers to the coverage of general environmental matters in broad program-level EIRs, with subsequent focused environmental documents for individual projects that implement the program. This environmental document is tiered from the LRDP EIR, as amended, and concentrates on project-specific issues. CEQA and the CEQA *Guidelines* encourage the use of tiered environmental documents to reduce delays and excessive paperwork in the environmental review process. This is accomplished in tiered documents by eliminating repetitive analyses of issues that are adequately addressed in the Program EIR and by incorporating those analyses by reference.

Section 15168(d) of the CEQA *Guidelines* provides for simplifying the task of preparing environmental documents on later parts of the program by incorporating by reference factors that apply to the program as a whole. Consistent with CEQA *Guidelines* Section 15152(d), where an EIR has been prepared or certified for a

program or plan, the environmental review for a later activity consistent with the program or plan should be limited to effects that were not analyzed as significant effects in the prior EIR or that are susceptible to substantial reduction or avoidance.

Accordingly, the tiering of the environmental analysis for the Proposed Project allows this Tiered IS/MND to rely on the LRDP EIR, as amended, for the following:

- a discussion of general background and setting information for environmental topic areas;
- overall growth-related issues;
- issues that were evaluated in sufficient detail in the LRDP EIR, as amended, for which there is no significant new information or change in circumstances that would require further analysis; and
- long-term cumulative impacts assessment.

The purpose of this Tiered IS/MND is to evaluate the potential environmental impacts of the Proposed Project with respect to the LRDP EIR, as amended.

2. Scope of the Tiered Initial Study and proposed Mitigated Negative Declaration

This Tiered IS/MND uses the analysis of general matters contained in the LRDP EIR, as amended, and concentrates on issues specific to the proposed Molecular Foundry project. Based on the analysis presented in this Tiered IS/MND, it has been determined that the Proposed Project would not result in any potentially significant impacts that cannot be mitigated to a less-than-significant level or are not sufficiently addressed by the LRDP EIR, as amended. None of the conditions described in CEQA or the CEQA *Guidelines* calling for preparation of a subsequent EIR have occurred.

3. Public and Agency Review

The Draft Tiered IS and proposed Mitigated Negative Declaration are being circulated for public and agency review from December 10, 2002 to January 13, 2003. Copies of the tiered IS/MND are available for review at the following locations:

Lawrence Berkeley National Laboratory Main Library, Building 50, room 4034, Lawrence Berkeley National Laboratory, One Cyclotron Road, Berkeley, California (510) 486-5621.

Berkeley Public Library, 2nd floor Reference Desk, 2090 Kittredge Street, Berkeley, California.

To be considered in the decision making for this project, all comments on the Draft Tiered IS/MND must be received by January 13, 2003 at the following address:

Jeff Philliber, Environmental Planning Coordinator
Lawrence Berkeley National Laboratory
One Cyclotron Road, MS 90K
Berkeley, California 94720

IV. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Hazards & Hazardous Materials	☐ Hydrology/Water Quality	☐ Land Use/Planning
☐ Mineral Resources	☐ Noise	☐ Population/Housing
☐ Public Services	☐ Recreation	☐ Transportation/Traffic
☐ Utilities/Service Systems	☐ Mandatory Findings of Significance	

Based on the analysis presented in this Tiered Initial Study, it has been determined that for all resource areas, the Proposed Project would not result in any significant impacts that cannot be mitigated to a less-than-significant level or are not sufficiently addressed by the LRDP EIR, as amended. The conclusion based on this Tiered Initial Study is that the project would incrementally contribute to certain impacts previously identified as significant in the LRDP EIR, as amended, but that for such impacts, no new mitigation measures, other than those previously identified in the LRDP EIR, as amended, are required. The Proposed Project would result in a new potentially significant biological resources impact, but Proposed Project-specific mitigation measures would reduce this impact to a less-than-significant level. Therefore, preparation of a Mitigated Negative Declaration is appropriate.

V. DETERMINATION: (To be completed by the Lead Agency)

On the basis of the initial evaluation that follows:

☒ On the basis of the Initial Study evaluation that follows, I find that the Proposed Project is within the scope of the LRDP EIR, as amended. Pursuant to CEQA Guideline 15168(c)(1), an Initial Study has been prepared, and that Initial Study has determined that, with the incorporation of mitigation measures, including mitigation measures set forth in the LRDP EIR, as amended, there will not be a significant effect on the environment because those mitigation measures have been incorporated into the project. Accordingly, a TIERED MITIGATED NEGATIVE DECLARATION WILL BE PREPARED. A tiered EIR will not be prepared because, pursuant to CEQA Guideline 15152(f), the project will not cause any significant effects on the environment that were not evaluated in the LRDP EIR, as amended, and also because there are no project changes, changes in circumstances, or new information requiring a further EIR pursuant to Guideline 15162.

Signature Date

Printed Name For

VI. PROJECT DESCRIPTION

INTRODUCTION

Lawrence Berkeley National Laboratory (LBNL) proposes to build an approximately 94,500 gross square foot (gsf) Molecular Foundry building, and an adjacent, subsurface Central Utility Plant (CUP) building, to be funded by the U.S. Department of Energy (DOE), as a part of DOE's Office of Basic Energy Sciences. The approximately two and one-half acre site would be located in the southeastern portion of the LBNL facility in the Oakland-Berkeley hills (see Figures 1 and 2). The site is on mostly undeveloped slopes between Building 72, which is the National Center for Electron Microscopy (NCEM), and Building 66, which is the Surface Science and Catalysis Laboratory (SSCL) (see Figure 3).

The Molecular Foundry would consist of two adjacent buildings: a six-story, 86,500-gsf building that includes laboratories, offices, and conference and seminar rooms; and an 8,000-gsf subsurface utility plant that would also serve as the foundation for approximately 16 surface parking spaces. A new plaza and pedestrian bridges would connect or provide ready access between the proposed Molecular Foundry building and the SSCL and NCEM. The project would extend Lee Road approximately 350 feet from the southwest corner of Building 66 in a north/northwest direction that would connect directly to the west side of the complex from Lawrence Road, and extend northward to the parking lot for Building 31. See Figure 4 for the footprint of the proposed Molecular Foundry Buildings (and proposed utilities). The project would also widen an existing 160-foot portion of Lee Road southwest of Building 62. The Molecular Foundry would be staffed by an estimated 137 persons, of which an estimated 59 would be staff persons, 36 would be students, and 42 would be visitors (visiting scientists) to the Foundry. The Proposed Project would require removal of an existing paved 18-space parking lot and retaining walls, as well as excavation into an undeveloped hillside. Approximately two-dozen mature trees would be removed, along with approximately one-dozen saplings. The project would replant or replace trees, generally in-kind and in or around the site. LBNL anticipates it will use the soil excavated for the Molecular Foundry to construct the new Lee Road extension and widen the existing roadway. See Figure 5 for the area of disturbance.

This project would be a resource for DOE's participation in the National Nanotechnology Initiative (NNI). Nanotechnology is the design, fabrication, characterization, and use of materials, devices, and systems through the control of matter at the nanometer-length scale.[3] Nanoscience is research concerned with physical objects at the nanometer-length scale. Nanoscience will be instrumental in developing the understanding of the nano-scale building blocks and the methods by which they are assembled into multi-component devices (see examples of applications, below).

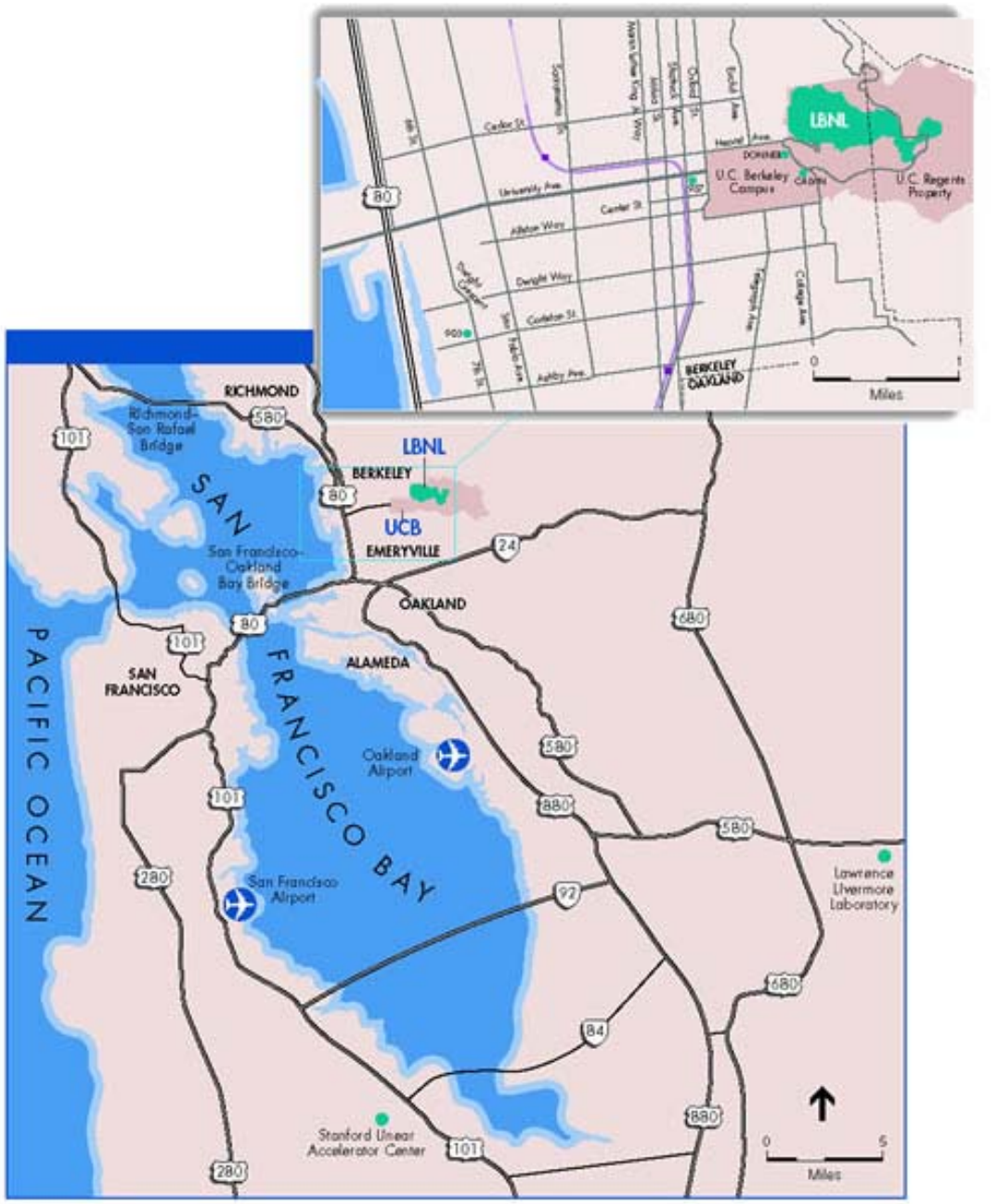
The Molecular Foundry would integrate researchers from various fields, including materials science, chemistry, biology, and computational science, to work and conduct research collaboratively. A few examples of the types of products and innovations hoped for with this sort of collaborative nanoscience and technology at the proposed Molecular Foundry include:

- Inexpensive and accessible terabyte-scale computer memories for personal computers and electronic devices;

[3] The term "nanometer" describes a length of one-billionth of a meter.

RESERVE FOR FIGURE 1

REGIONAL LOCATION MAP / LBNL MAP w/SITE MARKED



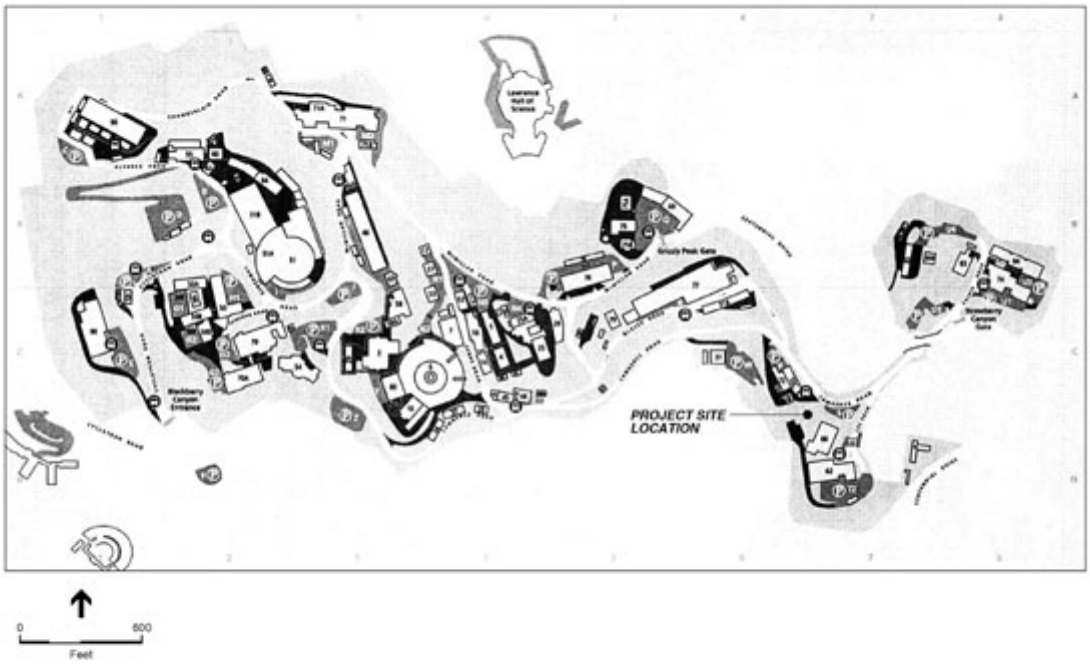
SOURCE: Lawrence Berkeley National Laboratory (2002)

LBNL Molecular Foundry / 202211 ■

Figure 1
Regional Location Map

RESERVE FOR FIGURE 2

SITE LOCATION MAP



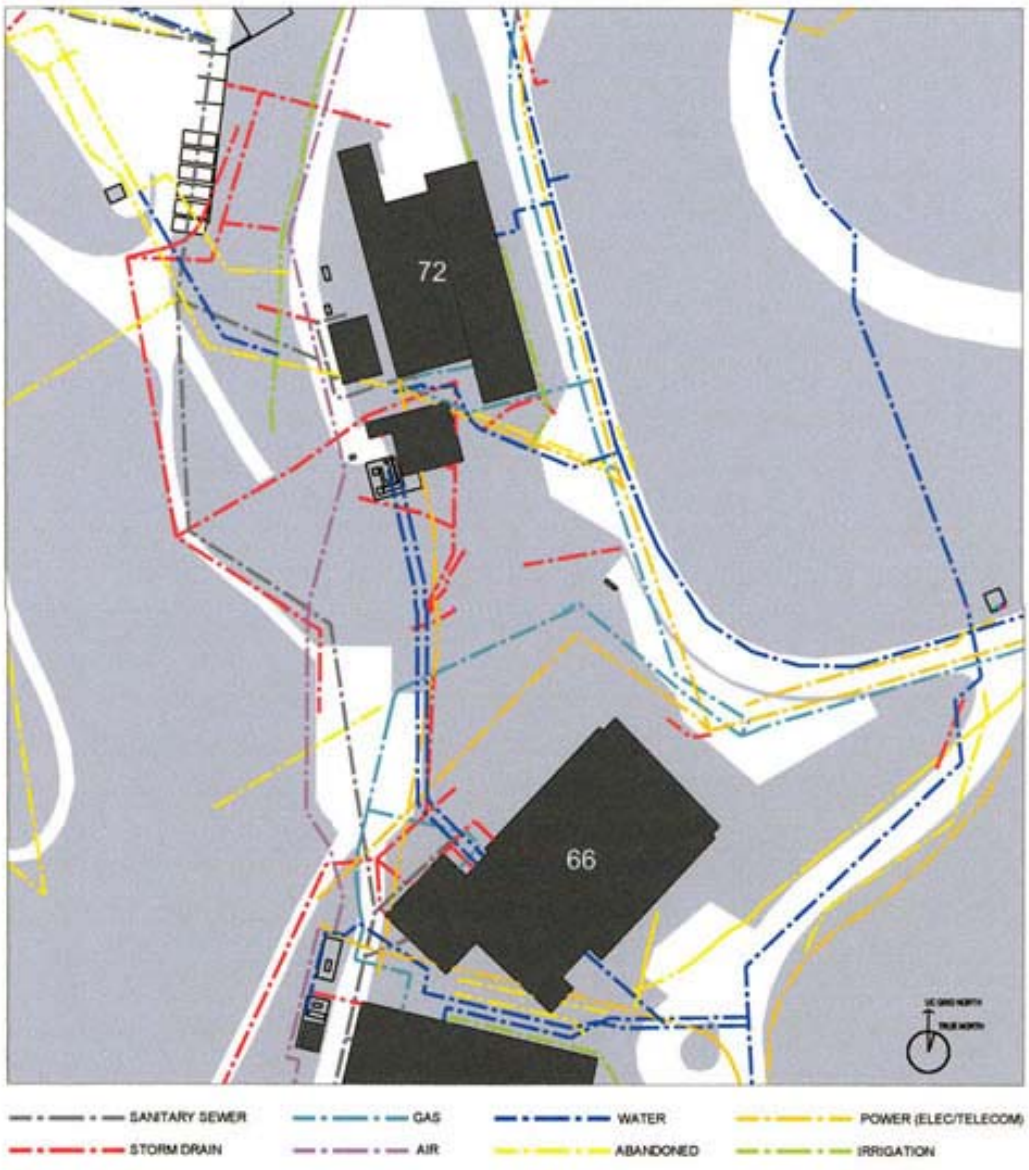
SOURCE: Lawrence Berkeley National Laboratory (2002)

LBNL Molecular Foundry / 202211 ■

Figure 2
Lawrence Berkeley National Laboratory, Berkeley, CA
Site Location Map

RESERVE FOR FIGURE 3

EXISTING PROJECT SITE w/EXISTING UTILITIES



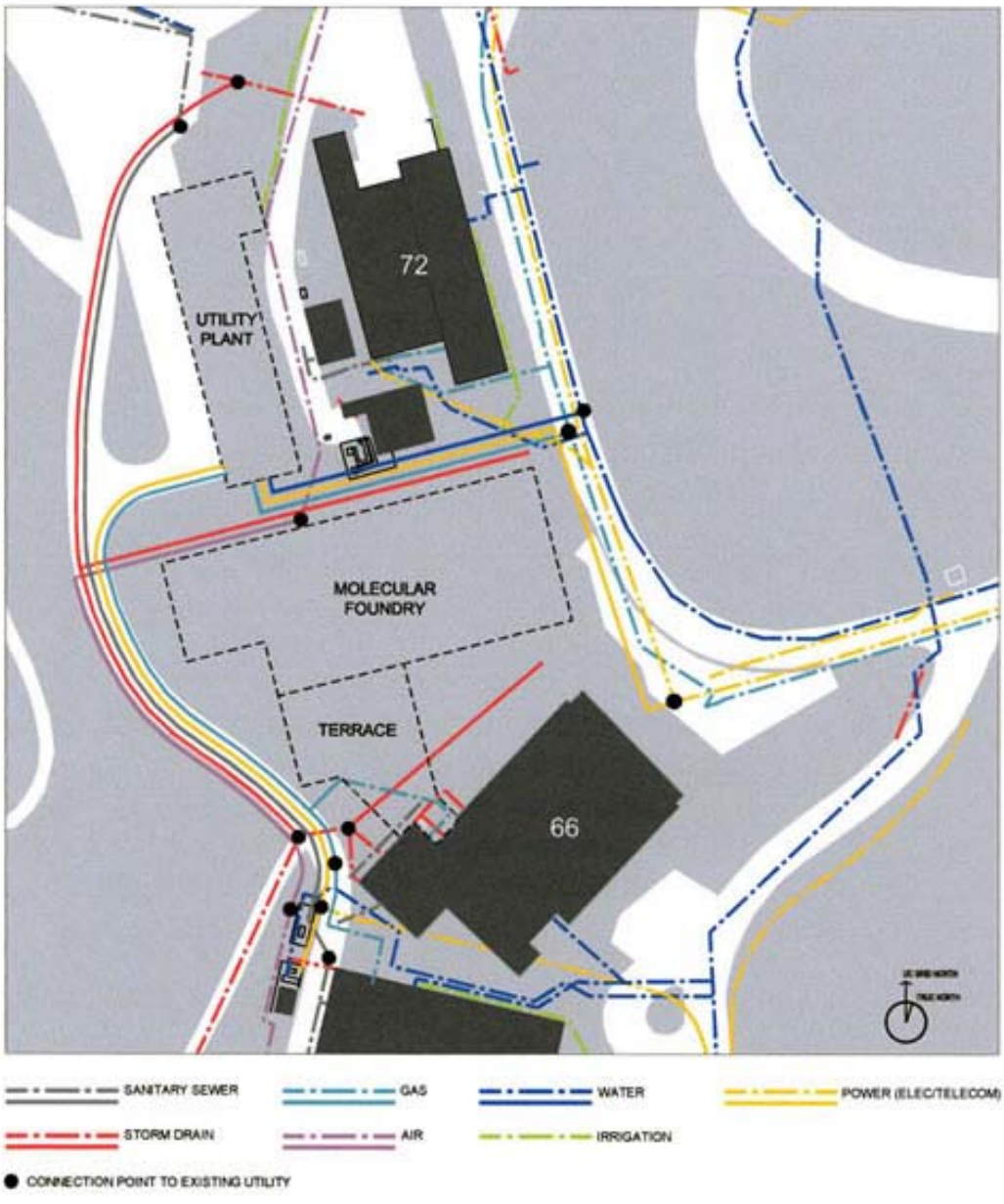
SOURCE: Lawrence Berkeley National Laboratory (2002)

LBNL Molecular Foundry / 202211 ■

Figure 3
Existing Project Site
with Existing Utilities

RESERVE FOR FIGURE 4

PROPOSED PROJECT FOOTPRINT AND PROPOSED UTILITIES



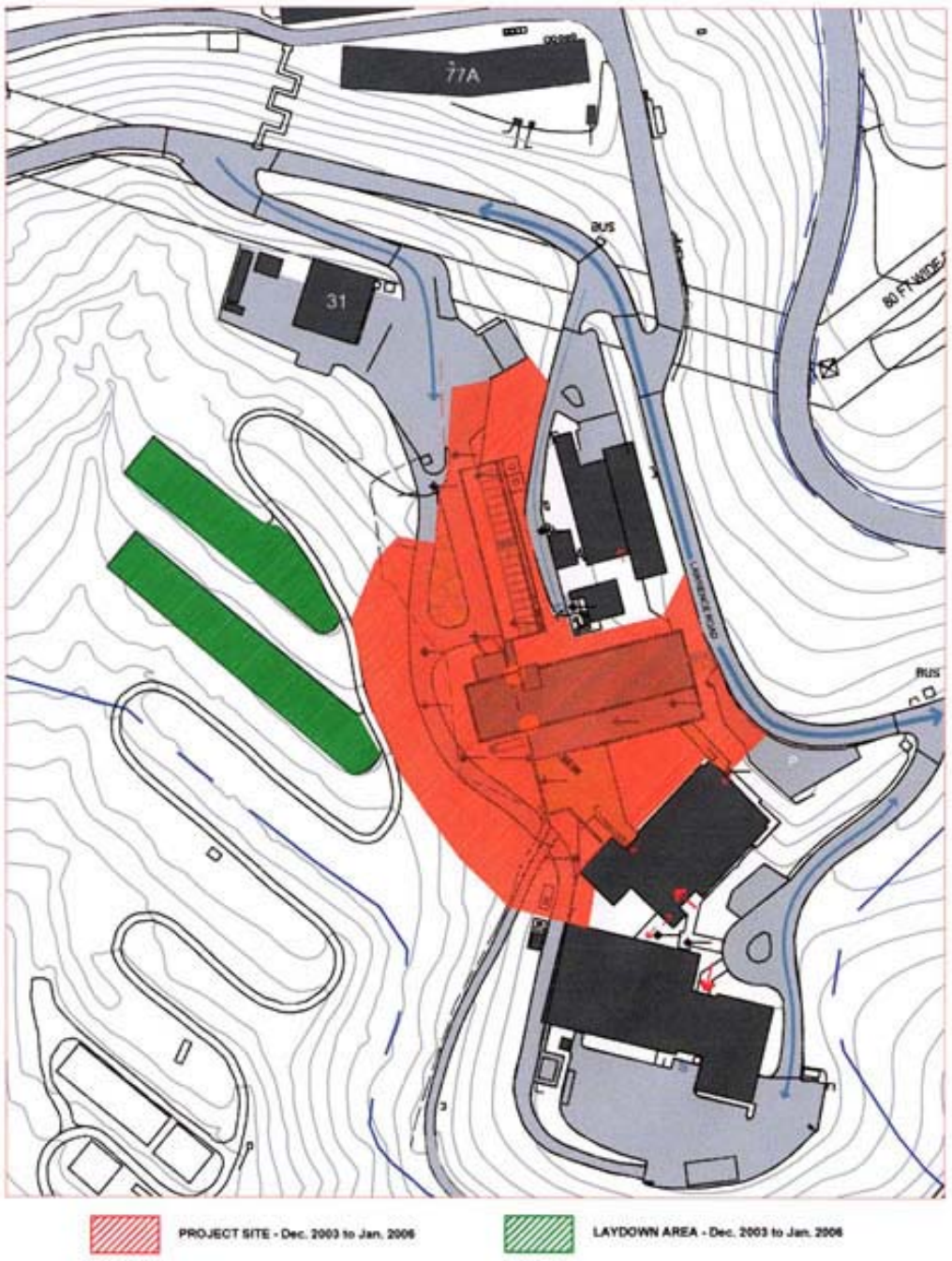
SOURCE: Lawrence Berkeley National Laboratory (2002)

LBNL Molecular Foundry / 202211 ■

Figure 4
Proposed Molecular Foundry Footprint
and Proposed Utilities

RESERVE FOR FIGURE 5

AREA OF DISTURBANCE FOR CONSTRUCTION OF MOLECULAR FOUNDRY



LBNL Molecular Foundry / 202211 ■

SOURCE: Lawrence Berkeley National Laboratory (2002)

Figure 5
Area of Disturbance for Construction of the Molecular Foundry

- Quantum computers capable of complex, enormous tasks such as cryptography and climate modeling;
- Compact, ultrasensitive, broad-spectrum chemical and biological sensors for homeland security protection of the food and water supply, and for diagnosis of disease;
- remote sensing devices;
- High-efficiency machine lubricants for increased efficiency and performance;
- light-weight, durable materials;
- Low-cost, high-efficiency photovoltaic cells for increased energy self-sufficiency;
- Ultrahigh selectivity catalysts for energy-efficient, low-waste production of products for industry and consumer use;
- Biologically-based devices and energy transduction systems for increased efficiency;
- Nano-scale (and thereby highly selective, effective, and safer) drug delivery agents, biomedical and microsurgical devices;
- Efficient, durable displays for electronic devices;
- New instruments to image and manipulate atoms, molecules, and small particles for miniaturization of devices and instruments;
- Faster, more compact computer chips.

The proposed Molecular Foundry laboratories would be designed and constructed to facilitate research activities in a wide variety of fields required for progress in this new area of science. These labs would support a broad research effort focusing on "hard" nanometer-sized materials (e.g., rigid, static, structural elements such as nanocrystals, tubes, and lithographically patterned structures) as well as "soft" nanometer-sized materials (e.g. flexible, dynamic, organic materials such as polymers, dendrimers, DNA, proteins, and whole cells).

The Molecular Foundry would house six facilities: 1) nanofabrication, 2) inorganic nanostructures, 3) organic, polymer/biopolymer synthesis, 4) biological nanostructures, 5) theory, and 6) imaging and manipulation. These facilities would be equipped with state-of-the-art instruments and would be staffed by fulltime scientists and technicians. They would function as user facilities, available to scientists from universities, industry, and government laboratories whose research proposals have been peer-reviewed by a study panel. This combination of equipment, collaborative staff, and disciplines would allow users a highly interdisciplinary approach.

The project site is located in LBNL's Materials and Chemistry Research Area. LBNL's 1987 Long Range Development Plan (LRDP) anticipates construction of a 30,000-gsf building at the project site. The proposed facility falls within the site-wide space projections of the1987 LRDP.[4] The project description of the proposed

[4] For illustrative purposes, the 1987 LRDP considered construction of a 30,000-gsf building at the project site, a 2,000-gsf addition to Building 62, and removal of 1,200 gsf of space, however, these construction projections are identified in the LRDP as serving "for general estimating purposes only" and do not represent a commitment to a particular project, program, or planning area. The University's LRDP findings are based on LBNL-wide or aggregate space projections.

Molecular Foundry includes all relevant mitigation measures from the programmatic LRDP EIR, as amended, from which this analysis is tiered.

LOCATION AND EXISTING CONDITIONS

The proposed project site is located in the southeastern portion of LBNL in the Oakland-Berkeley hills, within the City of Oakland, on mostly undeveloped slopes between LBNL Buildings 72 and 66 (see Figures 1, 2, and 3). The site also includes an existing paved parking lot with 18 striped parking spaces and a retaining wall, and an undeveloped downslope area extending from Lawrence Road along the northern side of Building 31 and the western side of Building 72. With the exception of the parking lot and a pathway along the eastern edge, the project site is covered with grasses and a variety of other plants.

West of the site are a chain-link fence and corporation yard, and further west are the University of California at Berkeley campus, Strawberry Creek, and the Panoramic Hill neighborhood. To the north are LBNL facilities, including the Grizzly Peak substation and undeveloped hillsides, as well as the Lawrence Hall of Science. Further north are residential neighborhoods in the City of Berkeley and the Tilden Regional Park. LBNL facilities, including LBNL's Human Genome Laboratory and the University of California's Botanical Garden, lie to the east. University of California-owned lands, regional open space areas, and the Claremont neighborhood of Oakland all lie to the south. The nearest residences are in the Panoramic Hill neighborhood of Berkeley, which is approximately one-third mile south of the project site at its closest point.

The project site is currently accessible from the southwest by Lee Road, which ends southwest of Building 66, and from the Building 66 back parking lot; to the east from Lawrence Road; and from the north by the Building 31 driveway and parking lot, via a dirt road that connects the Building 31 and Building 66 back parking areas. The site is within LBNL's vegetation control area, and as a result, grasses and plants are kept at a minimum height during fire season. As another component of the Lab's Vegetation Management Plan, non-native trees are removed within 100 feet of Buildings 62 and 66.

PROPOSED PROJECT

OPERATIONS

Staffing

The Molecular Foundry would be occupied by approximately 137 staff and students. Staff includes directors; scientific, technical, and administrative personnel; and visiting scientists. LBNL estimates that approximately 24 of these future Molecular Foundry staff are currently employed within the LBNL site; these would contribute to filling the projected 59 new staff positions. In addition, 42 visiting scientists would occupy the Molecular Foundry building along with an estimated 36 students and post-doctoral fellows.

It is assumed that the estimated 24 current LBNL staff who would join the Molecular Foundry from existing positions at LBNL would create vacancies that would most likely be filled within one year of their leaving. For that reason, all 137 staff positions are considered in the analysis for impacts. The sole exception to this is the six Directors, who would not be replaced and who would likely retain their office and laboratory spaces in their current, non-Molecular Foundry locations in addition to claiming Molecular Foundry occupancy space.

TABLE 1
ANTICIPATED MOLECULAR FOUNDRY STAFF

Category	Molecular Foundry Staffing Levels[a]
Directors	6
Scientific Staff	25
Technical Staff	18
Administrative Staff	10
Visiting Scientists	42
Students / Post Docs	36
Total	**137**

[a] Numbers are estimates and may be approximate.

SOURCE: Lawrence Berkeley National Laboratory (2002)

DESIGN CONSIDERATIONS

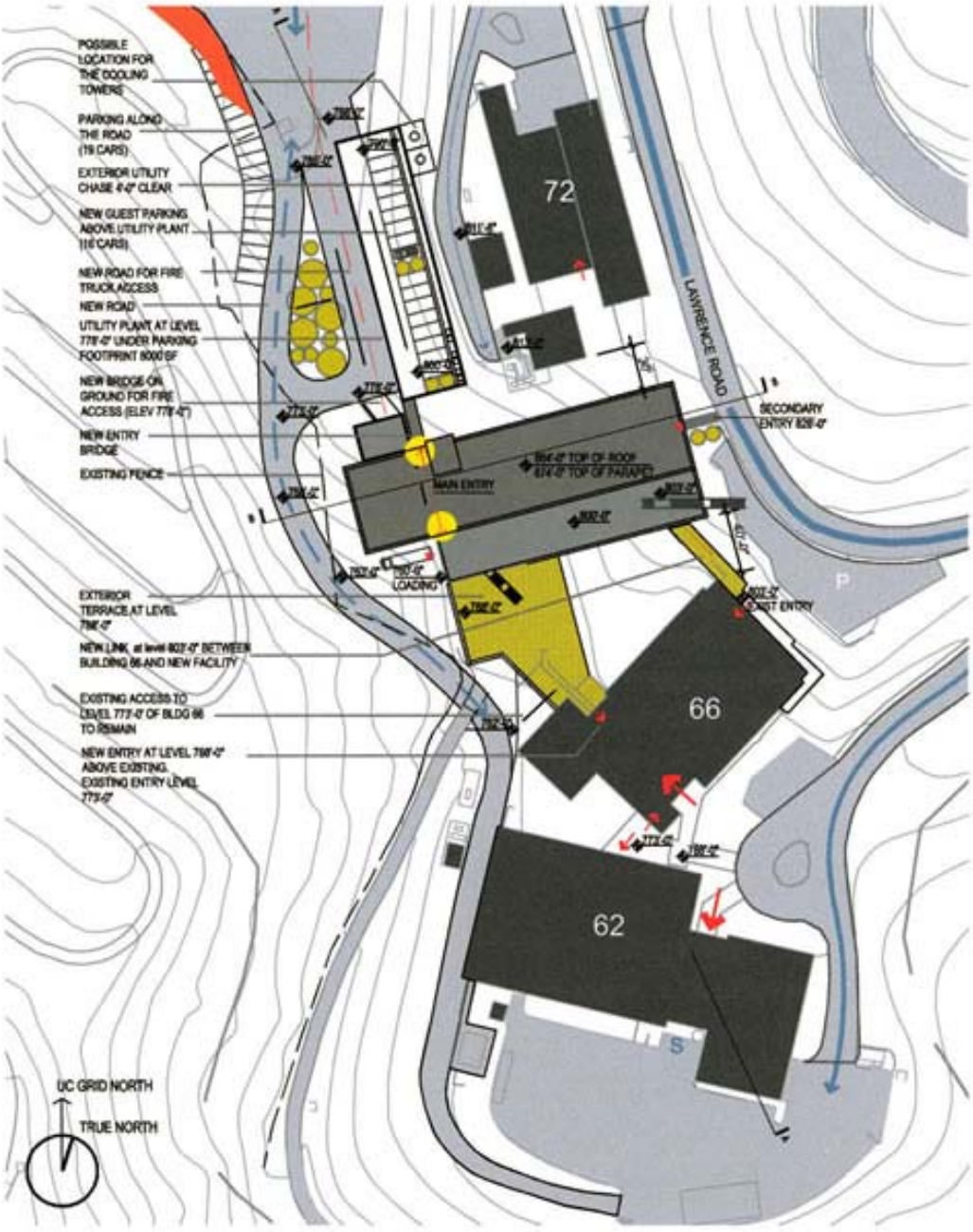
Building Design

The Proposed Project would consist of two buildings, a six-story, approximately 86,500-gsf Molecular Foundry building and an approximately 8,000-gsf subsurface Central Utility Plant building (see Figure 6) or a total approximate building area of 94,500 gsf. The Molecular Foundry project would include both buildings and other proposed site improvements and would include wet and dry laboratories, laboratory support facilities, equipment rooms, conference/seminar rooms, and offices. In addition, specialty rooms consisting of controlled temperature rooms, low vibration rooms, and "clean" rooms would be included. Table 2, below, provides a summary of proposed building uses.

Laboratory suites totaling approximately 28,500 assignable square feet (sf) would provide the Molecular Foundry with wet and dry laboratories, scientific support equipment space, and shared workstations for laboratory technicians. Private offices and workstations areas would be provided for employees, visitors, and students. As stated above, the Molecular Foundry would house six facilities (see Figure 7) designed to promote inter-disciplinary approaches. The first floor, concrete slab-on-grade, would accommodate isolated, vibration-controlled, mass dampening equipment foundations for the Imaging and Manipulation Laboratory. All laboratories would be constructed as semi-clean room space, with controls to maintain the pressure in the labs with respect to adjacent vestibules. The laboratory spaces would also be constructed to easily adapt to changing research needs for size, layout, temperature and pressure control, cleanliness, and utilities. The Foundry would include 48 fume hoods associated with its proposed laboratories. All fume hoods would exhaust to the roof and would meet all applicable vertical velocity and stack height requirements. The expected useful life of the building would be 50 years. Figures 8, 9, and 10 provide proposed floor plans.

RESERVE FOR FIGURE 6

MOLECULAR FOUNDRY SITE PLAN



SOURCE: Lawrence Berkeley National Laboratory (2002)

LBNL Molecular Foundry / 202211 ■

Figure 6
Molecular Foundry Site Plan

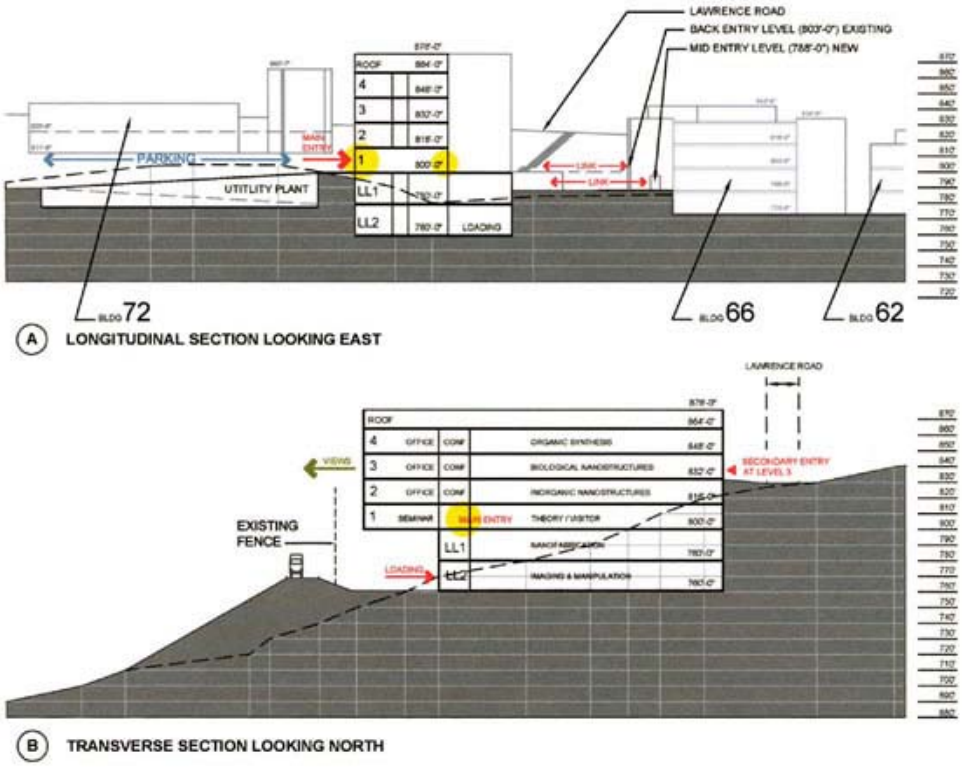
TABLE 2
MOLECULAR FOUNDRY BUILDING SUMMARY

Building Level	General Function	Square Feet (sq. ft.)	Description of Facilities
4	Organic Polymer/Bio-polymer synthesis	13,920 sq. ft.	Visitor offices, administrative offices, conference room, interaction room, visitor lab, chromatography lab, spectrography lab, cold room, synthesis labs.
3	Biological Nanostructures	13,920 sq. ft.	Visitor offices, administrative offices, conference room, interaction room, visitor lab, culture room, cell handling, optical characterization lab, warm room, freezer/storage room, cold room, glass wash room, synthesis labs, characterization/application lab, instrument lab.
2	Inorganic Nanostructures	13,920 sq. ft.	Visitor offices, administrative offices, conference room, interaction room, chemical vapor lab, dry furnace lab, visitor lab, dry computer room, pulsed laser deposition lab, wet lab/characterization lab control, flexible space.
1	Theory	14,920 sq. ft.	Main entrance, receptionist, seminar room, administrative offices for Program Director and staff, visitor offices, post-doctoral student space. Will also include link (open walkway and stairs) to Building 66 at first and second floors, and pedestrian link (open stairway) from Lawrence Road.
Lower Level 1	Nanofabrication Labs	17,100 sq. ft.	Interaction and conference room, clean rooms, administrative/staff offices for imaging and nanofabrication offices, clean rooms, chemical storage, gowning area.
Lower Level II	Imaging and Manipulation Labs	12,720 sq. ft.	Atomic manipulation UHV system, SPM/EM for transport measure, visitors' labs, main analysis lab, atomic resolution UHV NC-AFM, microwave AFM, showers/lockers, shipping/receiving, flammable storage, cylinder holding, janitorial supply room, prototype/instrument test lab, NMR lab.
SUBTOTAL		86,500 sq. ft.	
N/A	Central Utility Plant	8,000 sq. ft.	HVAC cooling towers, emergency generator, electrical substations, treated water fluid coolers, water heaters and chillers, an office/shop, treated water system, compressed air system, de-ionized water system, etc.
TOTAL	(NA)	94,500 sq. ft.	(NA)

SOURCE: Lawrence Berkeley National Laboratory (2002)

RESERVE FOR FIGURE 7

ELEVATION



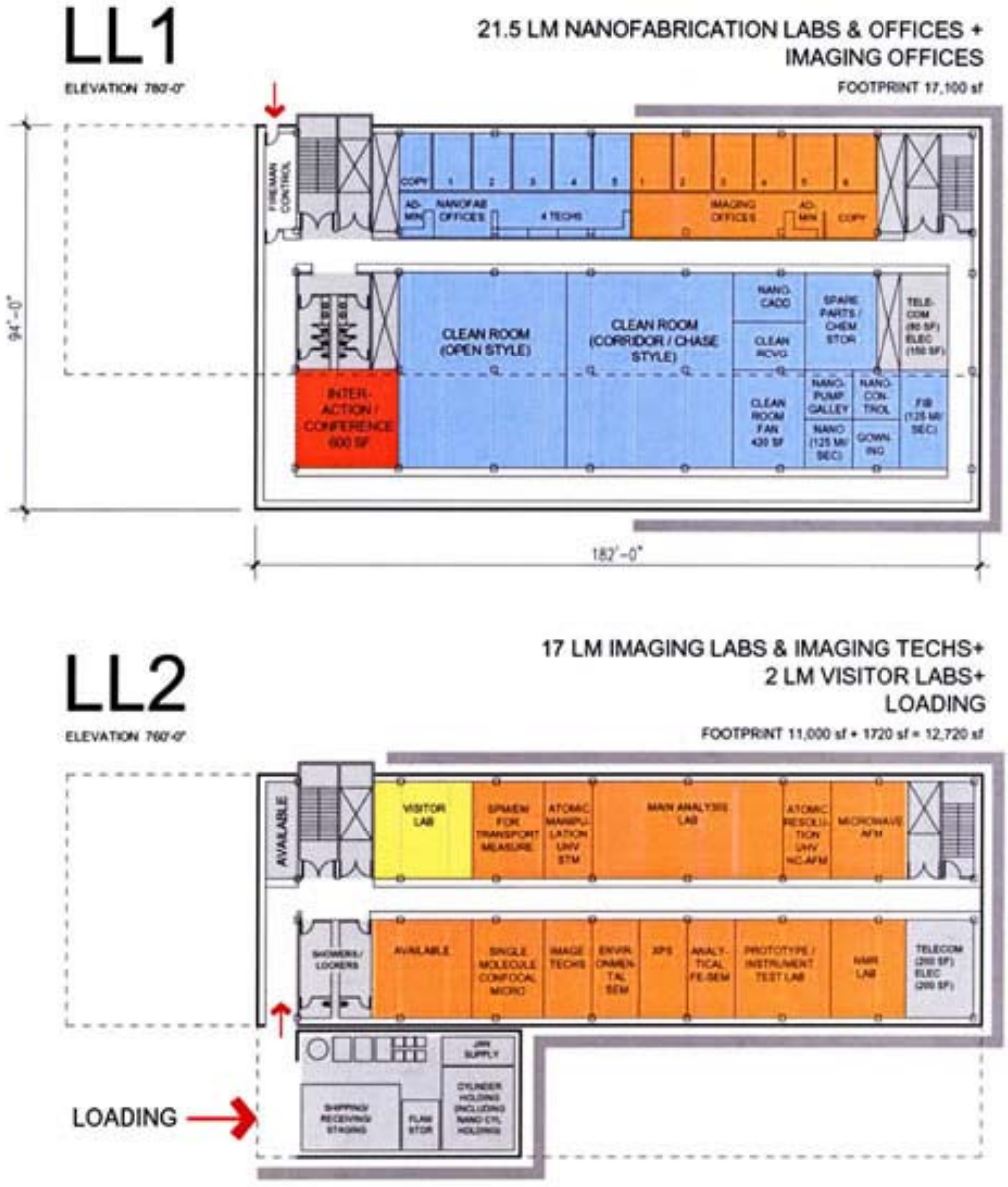
SOURCE: Lawrence Berkeley National Laboratory (2002)

LBNL Molecular Foundry / 202211 ■

Figure 7
Molecular Foundry Elevations

RESERVE FOR FIGURE 8

Floor



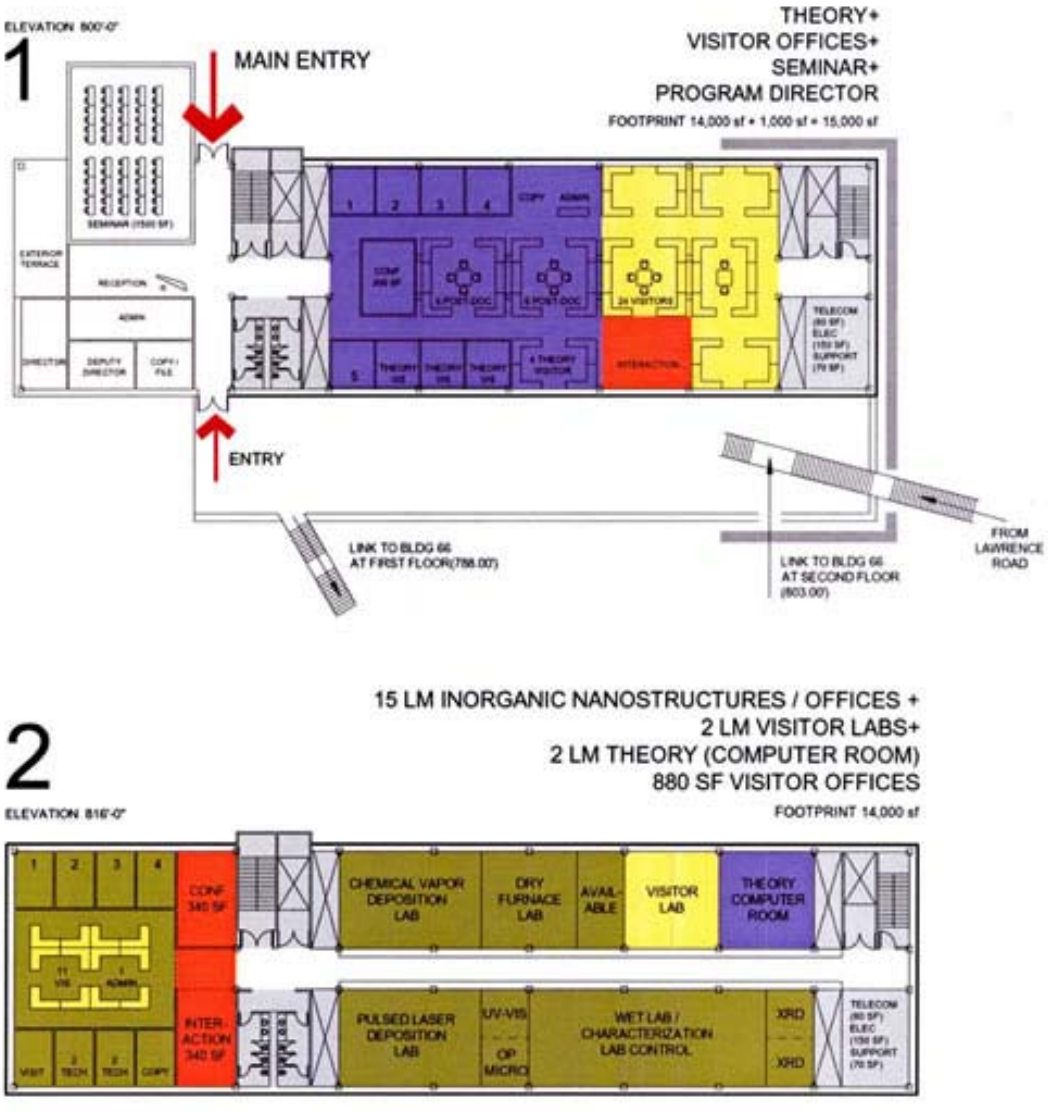
SOURCE: Lawrence Berkeley National Laboratory (2002)

LBNL Molecular Foundry / 202211 ■

Figure 8
Floor Plans of Nanofabrication and Imaging Labs and Offices

RESERVE FOR FIGURE 9

Floor

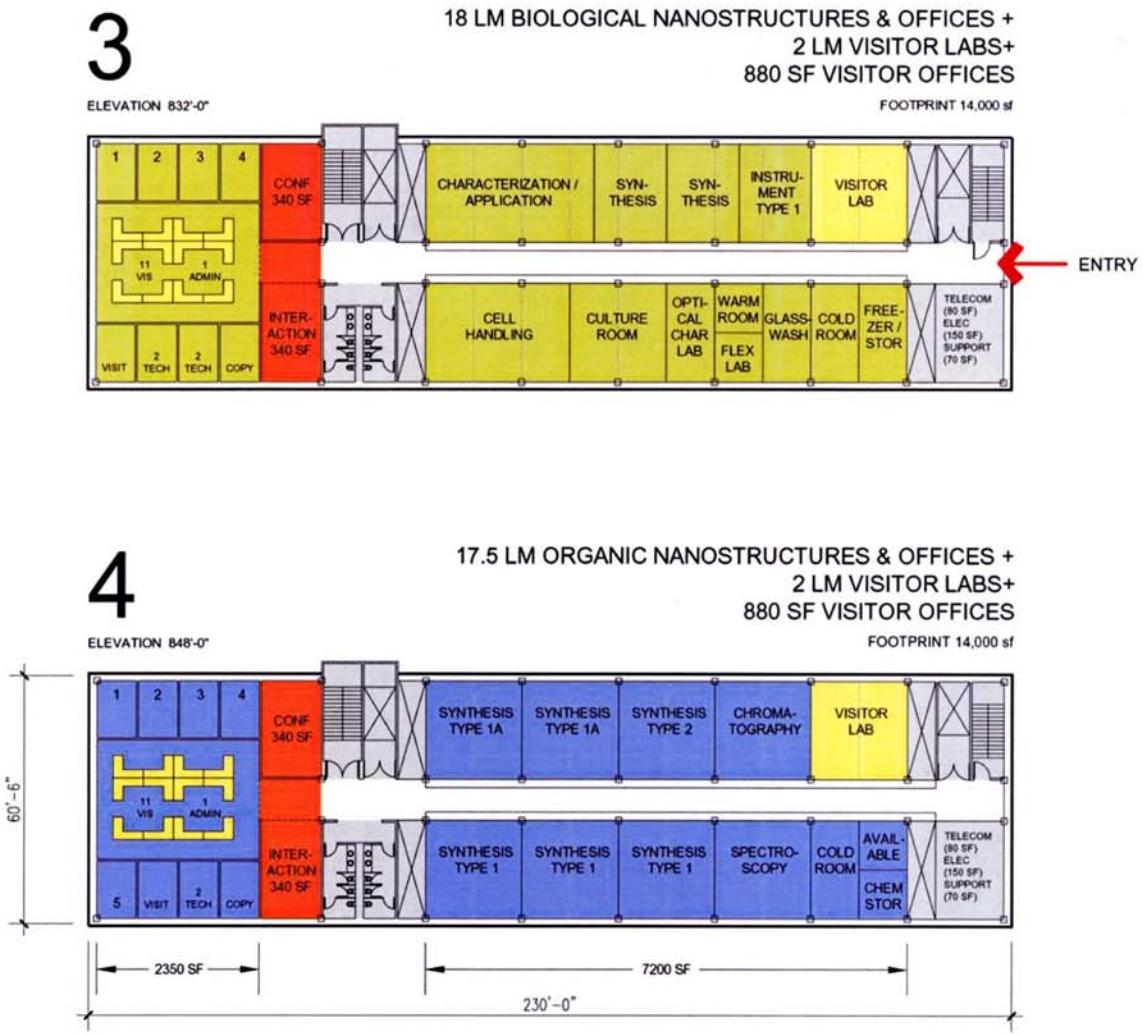


SOURCE: Lawrence Berkeley National Laboratory (2002)

LBNL Molecular Foundry / 202211 ■

Figure 9
Floor Plans of Theory Offices and
Inorganic Nanostructures and Offices

RESERVE FOR FIGURE 10
Floor



SOURCE: Lawrence Berkeley National Laboratory (2002)

LBNL Molecular Foundry / 202211 ■

Figure 10
Floor Plans of Biological and Organic Nanostructures and Offices

One of LBNL's goals is to incorporate cost-effective sustainable design principles into on-site construction. The Molecular Foundry's environmental impact would be minimized through the proposed building materials, waste minimization, energy and atmospheric impact minimization, water use efficiency, and environmental quality. As part of the project, LBNL prepared a Conceptual Design Report that includes a complete list of the sustainable building design features that would be considered during design. The structural design would account for all loads to which the structure may be subject, including dead, live, wind, and seismic. The design would comply with the requirements of the California Building Code (CBC) and LBNL's "Lateral Force Design Criteria."

The exterior skin of the building would consist of non-reflective material that would minimize glare and exterior maintenance. The building roof would be a single-sheet, co-polymer roofing membrane system with heat reflective coating to reduce solar gain. Metallic screens would be located on the roof to conceal rooftop mechanical exhaust equipment.

The Molecular Foundry would be designed in conformance with requirements for Group "B" and "H-8" research laboratory occupancies as defined by the CBC, Type II Fire Resistive Construction, and with seismic safety and fire safety code requirements. The building would comply with all applicable disabled accessibility requirements in accordance with the Americans with Disabilities Act (ADA).

The proposed subsurface Central Utility Plant building would be oriented along a north/south axis, perpendicular to the adjacent Molecular Foundry building. The Central Utility Plant building would be constructed so as to accommodate approximately 16 overhead surface parking spaces (i.e., on its roof) (see Figure 7, Longitudinal Section Facing East). This rooftop would also provide pedestrian access to the main entrance of the Molecular Foundry building on its first floor. As described in Table 2, above, the CUP building would house the various utility systems needed for the Molecular Foundry, including equipment for heater boilers, chillers and chilled water pumps, air handling units, fans, an electrical distribution system, and connections to the LBNL existing fire alarm system.

Circulation

As further described below, as part of the project, vehicular access to the project site would be accommodated by the extension of Lee Road, which would result in a semi-circular road that loops around the project site. The Proposed Project would therefore be accessible from two locations along Lawrence Road: at the three-way intersection of the proposed new extension of Lee Road, the Building 31 parking lot, and Lawrence Road north of the project site; and at the intersection of Lee Road and Lawrence Road east of the project site.

In addition to vehicular access, the proposed project design addresses three other types of circulation: building occupant / pedestrian traffic circulation, service access, and fire truck / emergency services access. Entrances to the Molecular Foundry building would be located as follows: LL2[5] (bottom floor)—loading dock on the south side of the building; LL1 (upper basement floor)—on the north side of the building; first floor—main entrance on the north side, secondary main entrance on the south side; and third floor—on the east side. Access to the Central Utility Plant building would be provided on the southwestern corner of the building.

Each floor of the Molecular Foundry building would be organized around a main corridor that would access the labs, offices, meeting rooms, stairs, elevators, and building entrances (see Figures 8, 9, and 10). All foot traffic through

[5] The abbreviation "LL" means "lower level" (see Table 1 and Figures 7 and 8).

buildings would be routed through these main corridors, stairs, and elevators. Outside the building, an exterior, landscaped terrace would span the distance between Building 66 and the proposed Molecular Foundry building and would facilitate access between the two (see Figure 7, Longitudinal Section Looking East). Specifically, a stairway from the terrace to the balcony of the Molecular Foundry building would provide access to the southside main entrance on the first floor. A walkway northeast of the terrace would similarly allow direct access between the Molecular Foundry balcony and Building 66. A stairway northeast of the Molecular Foundry building would access the Lawrence Road parking lot, upslope. A short walkway would allow direct pedestrian access from Lawrence Road to the third floor entrance of the building; this walkway would also connect to Building 72 to the north. Access to the northside main entrance would be provided from a pedestrian walkway connecting the Molecular Foundry building to the surface parking lot atop the Central Utility Plant building.

Service entry, delivery, and truck loading would take place at the westside entrance and loading bay of the Molecular Foundry building on LL2 (the bottom floor of the building). The service yard is screened from view by a retaining wall to the east and by a landscape wall to the north.

Fire truck and emergency services access would be accommodated from Lee Road and adjacent to the Central Utility Plant building parking lot and to the north of the Molecular Foundry building. This access would also provide sufficient turn-around for emergency vehicles back onto Lee Road. Fire and emergency vehicle access to the east of the building would be provided from Lawrence Road.

Roadway Design and Parking

The Proposed Project includes the extension of Lee Road by approximately 350 linear feet, from the southwest corner of Building 66 in a north/northwest direction to the parking area of Building 31. Lee Road intersects Lawrence Road northeast of Building 66, and follows a southwestern route, running along the eastern side of Buildings 62 and 66, curving around the southern perimeter of Building 62, and then running along the western sides of Buildings 62 and 66 to the project site (see Figure 6). In addition, as part of the project, a 160-foot portion of Lee Road, located at the southwest end of Building 62, would be widened from approximately 18 feet to approximately 24-= feet so as to safely accommodate two-way traffic. The proposed extension and widening would use soil excavated for construction of the Molecular Foundry complex.

Approximately 16 parking spaces would be provided on the inclining rooftop of the (partially below-grade) Central Utility Plant building. The building would be constructed with overhead reinforced concrete flat plate spanning from exterior supports spaced atop structural columns to support the parking load. Approximately 35 –to 40 additional spaces would be required to serve the project and to maintain LBNL's desired parking ratio of 1.7 full-time equivalents (employees) per parking space. Those additional spaces would come from the general LBNL pool of about 2,400 parking spaces.

Storm Drainage and Impermeable Area

The Proposed Project would add approximately 1.5 acres of impervious surface to the project site. This is less than one-half of one-percent of the total watershed area of 585 acres. Surrounding undeveloped areas would remain undeveloped and permeable and would continue to support grassland and tree groves. Roads, walkways, and parking areas would be paved with asphalt concrete or Portland cement concrete capable of handling appropriate vehicular and pedestrian traffic; state-of-the-art porous pavement will be considered for use where practical. To the

greatest extent possible, existing pervious surfaces would be preserved to minimize the amount of storm runoff. The terrace area would be a combination of paved and planted areas.

The Proposed Project would route surface water runoff into the LBNL storm drain system at points downslope and to the south and southeast of the Proposed Project. The Proposed Project would reroute an existing 12-inch storm sewer line that services this area along the newly constructed sections of Lee Road located south of the project site. This rerouted portion of the storm sewer line would be approximately 450 feet long and would extend from the northwestern area of Building 72 to the southwestern area of Building 66. New site storm drainage would collect and discharge in this re-routed 12-inch line.

Where relocation of existing storm drainage facilities is required, measures would be taken to provide controlled diversion of storm water during construction. Disturbed areas would receive final landscaping and seeding at the earliest practical time during construction so that ground cover would be well established by the next rainy season.

The drainage system would be capable of handling a 25-year storm of 2.5 inches of rain per hour and would be tied into the existing storm sewer at a junction approximately 50 feet south of the proposed project site. Rainwater from the new building roof and balcony areas would be considered for collection and storage for on-site use as non-potable landscape irrigation water and in other reclaimed water programs. Surface water drainage from the project site would be managed through the existing storm drain system, which discharges to a detention basin formed by a dam in Strawberry Creek.

All storm water discharged from LBNL must conform to LBNL's Storm Water Pollution Prevention Plan (SWPPP) and National Pollutant Discharge Elimination System (NPDES) permit, as required by the Clean Water Act and the State Water Resources Control Board. Oversight and enforcement of LBNL's SWPPP and NPDES permit are performed by the San Francisco Bay Regional Water Quality Control Board and the City of Berkeley.

Earthwork

The Proposed Project would require excavation of approximately 32,000 cubic yards of soil to construct the Molecular Foundry building and the Central Utility Plant building, and otherwise to prepare the site for roads and walkways. This fill material would not leave the site but would be used as engineered fill to construct the new Lee Road extension, along the western perimeter of the Molecular Foundry buildings, and for the widening of Lee Road, southwest of Building 62.

In all areas where excavations are to be made or fill deposited, the topsoil would first be stripped and stockpiled on-site for dressing finished slopes and for use in landscaped areas. Cut and fill slopes would not be steeper than recommended by a registered geotechnical engineer. Edges of cut banks would be rounded to blend into the natural terrain. Because excavations will be in the vicinity of existing buildings, shoring, bracing, and underpinning designed by a Professional Engineer would be used to secure the excavations. Based on long-term environmental investigations as well as site soil sampling conducted in January 2002, the site appears to be free of contamination or chemicals of potential concern.

Landscaping

The Proposed Project would require the removal of approximately three dozen trees to accommodate building footprints, roads, grading, and construction activities. These trees include Monterey pine, coastal redwood, coast live oak, and bay trees, most of which are located in the area adjacent to the western and southern faces of Building 72. Fewer than one dozen trees to be removed are downslope from the Building 66 rear parking lot, where trees occur in generally isolated patches. Much larger groves, consisting of up to several hundred trees each, in the general vicinity would remain untouched by the project, including a large screening grove of Canary Island pines to the west, a grove of screening redwoods to the southwest, a riparian corridor of various trees to the west and southwest, and several contiguous groves of oak, bay, acacia, and eucalyptus trees stretching from south of the project to the northeast.

The Proposed Project would transplant up to ten redwood or similarly sized trees along the western perimeter of Lee Road to provide screening for the project. Trees would be positioned to maximize screening benefits. In addition, replacement trees would be planted or transplanted in various locations in and surrounding the project site, particularly in the area between the Lee Road extension and the proposed Central Utility Plant building, which would receive about one dozen trees. All trees placed by the project would be irrigated as necessary. The LRDP EIR anticipates the loss of mature trees as the result of Lab development (Impact III-D-2) and stipulates that revegetation of the sort described here be included as part of all new projects (Mitigation Measure III-D-2a).

Fire-resistant ground cover would be planted as needed for erosion control. Plant materials would be selected based on their indigenous, water-saving, and low-maintenance characteristics. The proposed terrace area between the proposed Molecular Foundry building and Building 66 would be a combination of paved and planted areas. The surface parking area atop the proposed utility building would include some planted areas. Landscape design would conform to LBNL vegetation management and design guidelines.

The conceptual landscaping plan for the project site consists of three zones: a crafted zone to be located to the south, natural zones to the west and east, and a parking zone to the north. The crafted zone would include the elevated terrace space between Building 66 and the Proposed Project, and would incorporate both hard and soft landscaping elements to physically and visually connect and unify the building uses. The natural zone includes the fire-resistant ground cover for erosion control, as well as decorative plant materials that would be selected based on their indigenous, water-saving, and low-maintenance characteristics. Finally, the parking zone would be located atop the proposed, below-grade utilities building to minimize the project's footprint and any potential disturbance to the existing natural environment.

UTILITIES

Utilities Corridor

New water supply, electrical power, and natural gas service would be routed along the north side of the proposed Molecular Foundry building, from points of connection on Lawrence Road along the north of the Foundry building into the south side of the proposed Central Utilities Plant building. Two parallel above-ground treated water lines that currently traverse the project site would be removed and replaced (see Figure 3).

Water Supply

An existing 12-inch high pressure cold water (HPCW) main is routed beneath Lawrence Road, along with fire and domestic water service to Building 72. Fire protection and domestic water services for the new building would be supplied via a connection to this existing 12-inch HPCW. New fire hydrants would be placed along the lower site with a connection to the existing 6-inch HPCW at the southwest corner of Building 66. The project would install low-flow plumbing fixtures and water-saving appliances. Water supply would be separated into industrial and domestic cold water systems. The industrial system would serve lab sinks and equipment; the domestic system would serve kitchen, restroom, and drinking fountain functions. Water pressure range would be 35 to 50 pounds per square inch. Engineering and safety features such as backflow preventers will be installed where appropriate and feasible.

Storm Water

As discussed earlier, an existing sub-grade storm water drainage piping crosses the proposed Molecular Foundry footprint. This line would be re-routed to the proposed lower access road, extending approximately 450 feet from the lower (western) side of Building 72 to the lower (western) side of Building 66. New site storm drainage would collect and discharge into this re-routed line.

Sanitary Sewer

An existing sub-grade 6-inch sanitary sewer line crosses the proposed Molecular Foundry building footprint (see Figure 3). This line would be re-routed to the proposed lower access road, extending approximately 450 feet from the lower (western) side of Building 72 to the lower (western) side of Building 66. Sanitary sewage from the Proposed Project would discharge into this re-routed line (see Figure 4).

Natural Gas

An existing sub-grade 3-inch high-pressure natural gas main crosses the proposed Molecular Foundry building footprint (see Figure 3). This line would be re-routed, extending approximately 210 feet between the proposed Molecular Foundry building and Building 72 (see Figure 4).

Compressed Air

An existing sub-grade 3-inch compressed air line crosses the proposed Molecular Foundry building footprint (see Figure 3). The line would be re-routed to the lower access road, extending approximately 360 feet from between Building 72 and the Central Utility Plant building to the lower (western) side of Building 66 (see Figure 4).

Treated Water

Existing supply and return treated water-piping crosses the proposed Molecular Foundry building footprint (see Figure 3). This above-grade piping, which currently extends from the Building 72 complex to Building 66, would be abandoned and removed (see Figure 4). Treated water for Proposed Project operations would be supplied from the proposed Central Utility Plant building.

The Central Utility Plant would supply chilled water, treated water, heated water, purified water, and de-ionized water to the Molecular Foundry. The chilled water would be produced by two 350-ton centrifugal, water-cooled, variable speed drive chillers and two water towers located at the northeast corner of the Central Utility Plant building.

Power

A 12,470-volt electrical power supply would be routed from the existing LBNL SW-A5 substation near the Strawberry Canyon entrance gate along Lawrence Road, approximately 1,000 feet east of the project site. The estimated load for the Molecular Foundry operations would be 3,800 kVA, assuming a 30 percent spare capacity.

Emergency electrical power would be supplied by a 750-kilowatt diesel generator located within the Central Utility Plant building. A 3,000-gallon above ground, double-contained tank would supply fuel storage for 48 hours of generator operation. An authority to construct and a permit to operate from the Bay Area Air Quality Management District would be necessary before the emergency generator could be placed and used.

Natural gas for lab work, water heating, and space heating would be supplied to the Molecular Foundry through the Central Utility Plant by a tie-in on the sub-grade gas main along Lawrence Road. Gas would be supplied at 7-inch water column pressure at approximately four cfg per working outlet. LBNL's standard gas meters, pressure regulators, and automatic seismic shut-off valves would be incorporated into the project.

Exhaust

The Molecular Foundry building would include one common system for both fume hoods and general exhaust. The exhaust capacity of the Foundry building is estimated to be approximately 25,000 cubic feet per minute for the four primary fans and 28,000 cubic feet per minute for four standby fans that would comprise the building exhaust system.

An estimated 48 fume hoods would be installed in the Molecular Foundry. The normal chemical fume hoods would be variable air volume hoods. Each fume hood would be equipped with a hood-ventilated air sensor. Flammables and corrosives storage would take place in special cabinets either beneath or adjacent to a fume hood, and cabinet vents would be plumbed to the hood exhaust system.

Fume hood exhausts would be located on the Molecular Foundry building roof. Discharge from the fume exhaust would meet all applicable vertical velocity and stack height requirements. Air intakes for the foundry would be located in different areas of the roof. Potential air re-entrainment from the proximity of fume hood exhausts and air intakes would be avoided through specific engineering and design-including wind-tunnel modeling, if necessary, during the design phase of the Proposed Project.

Telecommunications

Telecommunications services would be provided from the existing telephone and data communications node located south of Building 62.

CONSTRUCTION

Construction would take place over a 24-month period, beginning in approximately January 2004 and ending in approximately February 2006. Construction staging would likely take place in the adjacent corporation yard, downslope of the project site. The staging area would be primarily on two existing plateaus alongside Chicken Creek Road in the Poultry Husbandry Area. These areas total approximately one-half acre and are currently and historically used for vehicle parking and construction laydown uses.

Approximately 32,000 cubic yards would be excavated to construct the Molecular Foundry project: approximately 26,500 cubic yards of material would be excavated to construct the Molecular Foundry building, and approximately 5,500 cubic yards would be excavated to construct the Central Utility Plant building.

Excavation of fill material, with the exception of topsoil, would not be stockpiled for extended periods but would be used shortly or immediately after it was excavated. If stockpiling were to occur, however, it would take place within the project site boundaries and would adhere to LBNL's standard construction practices and a project-specific Storm Water Construction Permit and Pollution Prevention Plan, such as watering as necessary to minimize dust and covering to prevent downstream water quality degradation from run-off (LRDP EIR, as amended, Mitigation Measures III-J-1).

It is anticipated that some dewatering might be necessary during project excavation and construction. If dewatering were necessary during excavation and construction, it would not be expected to contain any chemicals of special concern given the results of sampling conducted in January 2002.[6] Such water, if encountered, could therefore be discharged as specified in the Storm Water Pollution Prevention Plan (SWPPP) that would have to be in place before project construction could begin. It is expected that the SWPPP would rely on such practices as installation of silt traps, fencing, and the use of filter fabric or other measures to protect surface drains and storm sewers during excavation, construction, and dewatering phases of the Proposed Project. Specific erosion and sedimentation control measures, such as construction entrance stabilization, silt traps, netting on slopes, and cover of dirt piles, would be detailed in the Plan.

The Molecular Foundry building foundation would consist of 36-inch-diameter drilled, cast-in-place piers. These piers would be approximately 40 to 45 feet long. The Central Utility Plant building would be constructed on a foundation of spread footings. No pile driving would be used in the construction of this project.

The Molecular Foundry Project Office, with support from the LBNL Construction Safety Engineer, would monitor the construction site for compliance with LBNL, DOE, CAL/OSHA and CAL/EPA, federal OSHA and EPA, and other applicable safety requirements identified in LBNL's Work Smart Standards. Monitoring activities would include validation of the contractor's ISM program, apprising the contractor of safety criteria pertaining to the construction project, conducting and documenting frequent periodic inspections to verify contractor safety compliance, and ensuring that the construction contractor was meeting ongoing ES&H submittal requirements.

[6] Lawrence Berkeley National Laboratory and BC Laboratories, Inc., *Environmental Sampling Report: Radiological, Organics, and Metals Sampling and Analysis at the Proposed Molecular Foundry Site,* February 1, 2002.

REQUIRED PROJECT APPROVALS

The 200-acre LBNL site is owned by The Regents of the University of California and is leased to the Department of Energy (DOE); the National Laboratory facilities themselves are owned by DOE. LBNL is operated by the University of California under a contract with DOE. The Board of Regents of the University of California (The Regents) is the University's decision-making body. The Regents will be asked to review and consider this Tiered Initial Study/Mitigated Negative Declaration, and to adopt Findings and a Mitigation Monitoring Program in conjunction with their review and consideration of the design of the proposed Molecular Foundry project. It is currently anticipated that the Molecular Foundry project would be presented for The Regents' consideration and approval at the March 2003 Regents meeting.

DOE has funding approval for the proposed Molecular Foundry project. DOE would also decide whether to adopt a mitigated Environmental Assessment (EA) and any Finding of No Significant Impact that has been prepared under NEPA. The Draft EA has been prepared and is circulated for agency and public review along with this Tiered IS/MND.

The Bay Area Air Quality Management District (BAAQMD) will be asked to grant an Authority to Construct and Permit to Operate for installation and operation of the proposed 750-kilowatt diesel-powered emergency generator. BAAQMD has regulatory authority over air emission sources in the nine-county Bay Area.

The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB) have permitting authority for issuing a Storm Water Construction Permit, which is currently required for construction projects of more than one acre (the site is approximately two and one-half acres). In addition, modification to the Lab's SWPPP, which is part of its NPDES Phase I General Industrial Stormwater Discharge Permit, would be necessary to update such items as site maps, storm drainage rerouting, and estimates of impervious area on the site. It is not currently anticipated that final project design will include any operational elements that would affect runoff or involve a routine unauthorized discharge as defined in the permit. The East Bay Municipal Utility District (EBMUD) has permitting authority for issuing a Wastewater Discharge Permit. The current site-wide Wastewater Discharge Permit is adequate, but any project-related changes to operations would require notification of EBMUD. At a minimum, notification will be made to EBMUD of increased water usage on site. A determination of the necessity for any further notification based on operations would be made based on specific research plans that are developed during final design of the Proposed Project.

VII. IMPACT QUESTIONS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Impact for which LRDP/ Program EIR is Sufficient	Less Than Significant Impact	No Impact
1. AESTHETICS -- Would the project:					
a) Have a substantial adverse effect on a scenic vista?			X		
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?					X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			X		
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X		
e) Exceed an applicable LRDP or Program EIR standard of significance?			X		
2. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:					
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?					X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?					X
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?					X
d) Exceed an applicable LRDP or Program EIR standard of significance?					X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Impact for which LRDP/ Program EIR is Sufficient	Less Than Significant Impact	No Impact
3. AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:					
a) Conflict with or obstruct implementation of the applicable air quality plan?			X		
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			X		
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			X		
d) Expose sensitive receptors to substantial pollutant concentrations?			X		
e) Create objectionable odors affecting a substantial number of people?					X
f) Exceed an applicable LRDP or Program EIR standard of significance?			X		
4. BIOLOGICAL RESOURCES -- Would the project:					
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X			
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?					X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Impact for which LRDP/ Program EIR is Sufficient	Less Than Significant Impact	No Impact
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?					X
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?					X
e) Conflict with any local applicable policies protecting biological resources?					X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other applicable habitat conservation plan?					X
g) Exceed an applicable LRDP or Program EIR standard of significance?		X			
5. CULTURAL RESOURCES -- Would the project:					
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?			X		
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?			X		
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X		
d) Disturb any human remains, including those interred outside of formal cemeteries?			X		
e) Exceed an applicable LRDP or Program EIR standard of significance?					X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Impact for which LRDP/ Program EIR is Sufficient	Less Than Significant Impact	No Impact
6. GEOLOGY AND SOILS -- Would the project:					
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:			X		
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			X		
ii) Strong seismic groundshaking?			X		
iii) Seismic-related ground failure, including liquefaction?					X
iv) Landslides?			X		
b) Result in substantial soil erosion or the loss of topsoil?			X		
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X		
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			X		
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?					X
f) Exceed an applicable LRDP or Program EIR standard of significance?					X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Impact for which LRDP/ Program EIR is Sufficient	Less Than Significant Impact	No Impact
7. HAZARDS AND HAZARDOUS MATERIALS – Would the project:					
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X		
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X		
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X	
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?					X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?					X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?					X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X		
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			X		
i) Exceed an applicable LRDP or Program EIR standard of significance?					X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Impact for which LRDP/ Program EIR is Sufficient	Less Than Significant Impact	No Impact
8. HYDROLOGY AND WATER QUALITY -- Would the project:					
a) Violate any water quality standards or waste discharge requirements?			X		
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			X		
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?			X		
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				X	
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			X		
f) Otherwise substantially degrade water quality?			X		
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?			X		
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?			X		
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?			X		

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Impact for which LRDP/ Program EIR is Sufficient	Less Than Significant Impact	No Impact
j) Inundation by seiche, tsunami, or mudflow?					X
k) Exceed an applicable LRDP or Program EIR standard of significance?					X
9. LAND USE AND PLANNING - Would the project:					
a) Physically divide an established community?					X
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the LRDP, general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			X		
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?					X
d) Exceed an applicable LRDP or Program EIR standard of significance?					X
10. MINERAL RESOURCES -- Would the project:					
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?					X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?					X
c) Exceed an applicable LRDP or Program EIR standard of significance?					X
11. NOISE – Would the project result in:					
a) Exposure of persons to or generation of noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies?				X	
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?					X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X	

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Impact for which LRDP/ Program EIR is Sufficient	Less Than Significant Impact	No Impact
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X		
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?					X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?					X
g) Exceed an applicable LRDP or Program EIR standard of significance?					X
12. POPULATION AND HOUSING -- Would the project:					
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			X		
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?					X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?					X
d) Exceed an applicable LRDP or Program EIR standard of significance?					X
13. PUBLIC SERVICES					
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:					
Fire protection?			X		
Police protection?			X		

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Impact for which LRDP/ Program EIR is Sufficient	Less Than Significant Impact	No Impact
Schools?					X
Parks?					X
Other public facilities?			X		
b) Exceed an applicable LRDP or Program EIR standard of significance?					X
14. RECREATION --					
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?					X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?					X
c) Exceed an applicable LRDP or Program EIR standard of significance?					X
15. TRANSPORTATION/TRAFFIC -- Would the project:					
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?				X	
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?					X
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?					X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?					X
e) Result in inadequate emergency access?					X
f) Result in inadequate parking capacity?			X		

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Impact for which LRDP/ Program EIR is Sufficient	Less Than Significant Impact	No Impact
g) Conflict with applicable policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	_____	_____	_____	_____	__X__
h) Exceed an applicable LRDP or Program EIR standard of significance?	_____	_____	_____	_____	__X__
16. UTILITIES AND SERVICE SYSTEMS – Would the project:					
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	_____	_____	__X__	_____	_____
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	_____	_____	___X__	_____	_____
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	_____	_____	___X__	_____	_____
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	_____	_____	___X__	_____	_____
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	_____	_____	__ X__	_____	_____
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	_____	_____	___X__	_____	_____
g) Comply with applicable federal, state, and local statutes and regulations related to solid waste?	_____	_____	___X__	_____	_____
h) Exceed an applicable LRDP or Program EIR standard of significance?	_____	_____	_____	_____	__X__

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Impact for which LRDP/ Program EIR is Sufficient	Less Than Significant Impact	No Impact
17. MANDATORY FINDINGS OF SIGNIFICANCE --					
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	_____	_____	___X___	_____	_____
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	_____	_____	___X___	_____	_____
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	_____	_____	___X__	_____	_____

18. Fish and Game Determination

Based on the information above, there is no evidence that the project has a potential for a change that would adversely affect wildlife resources or the habitat upon which the wildlife depends. The presumption of adverse effect set forth in 14 CCR 753.5 (d) has been rebutted by substantial evidence.

☐ Yes (Certificate of Fee Exemption)

☒ No (Pay fee)

VIII. NARRATIVE DISCUSSION OF CHECKLIST EVALUATION

(unless discussion of impacts is integrated in section V. 1-16)

1. AESTHETICS

LRDP EIR, as amended:

The impact of LBNL projects on visual quality would be considered significant if it would exceed the following Standards of Significance, established by the LRDP EIR, as amended:

- Fail to comply with guidelines or goals related to visual quality;
- Significantly alter the existing natural viewsheds, including changes in natural terrain;
- Significantly change the existing visual quality of the region or eliminate visual resources;
- Significantly increase light and glare in the project vicinity; and
- Significantly reduce sunlight or introduce shadows in areas used extensively by the campus population.

The following relevant impacts to visual quality and aesthetics have been anticipated and analyzed pursuant to CEQA, as part of the programmatic LRDP EIR, as amended, from which this analysis is tiered:

Impact III-F-1:	Continued implementation of the 1987 LRDP will result in a change to the visual quality of LBNL and the surrounding environs. Impact III-F-2: Some LBNL projects may be visible because trees, which would have screened the building, have been removed and replacement landscaping will take some time to reach full height.
Impact III-D-2:	Continued University operation of LBNL, including continued implementation of the LRDP, will result in the loss of some vegetation, including potential loss of mature trees and areas with some habitat for non-critical species.
Cumulative Impacts[7]:	No significant cumulative impacts are expected.

As a result of anticipated impacts to visual quality, the following mitigation measures, adopted as part of the LRDP EIR, as amended, are already required for the Proposed Project, and are therefore incorporated as part of the Proposed Project's description:

Mitigation Measure III-F-1a:	Buildings will occupy as limited a footprint as feasible. They will incorporate features that enhance flexibility and future versatility.

[7] LRDP EIR, as amended, cumulative impacts discussions are summarized rather than quoted here and throughout this document where concise cumulative impact statements were not articulated in the LRDP EIR, as amended.

Mitigation Measure III-F-1b:	Buildings will be planned to blend with their surroundings and be appropriately landscaped. Planned objectives will be for new buildings to retain and enhance long-distance view corridors and not to compromise views from existing homes. New buildings will generally be low-rise construction.
Mitigation Measure III-F-2:	Any new facilities will not use reflective exterior wall materials or reflective glass, to mitigate the potential impacts of light and glare.
Mitigation Measure III-D-2a:	Revegetation of disturbed areas, including slope stabilization sites, using native shrubs, trees, and grasses will be included as part of all new projects.

Discussion:

a) The Proposed Project is located in an area intermittently visible from surrounding short- and long-range viewpoints. The site is adjacent to the easternmost[8] perimeter of the UC Berkeley campus in a scenic area that encompasses the Oakland and Berkeley Hills, and Strawberry and Blackberry Canyons. The hills provide a semi-natural, vegetated open-space backdrop to the project site. Most of the western slopes of these hills are wooded with either native canyon stands of oak and California bay or with introduced plantations of eucalyptus or conifers. It is these terrain features, most notably the slopes that comprise the Strawberry Canyon and the surrounding stands of tall trees, that provide cover to the proposed project site from most potential viewpoints in the surrounding region.

Although adjacent to the Building 66 and 72 complexes and roadways, the proposed, approximately 2.5-acre project site is currently mostly undeveloped and includes several trees and grassland areas, and an asphalt surface parking area at the central portion of the site. The site is located in a portion of Strawberry Canyon that is visible to persons along a short segment of Lawrence Road in the immediate vicinity of the site or further east and uphill of the site along portions of Centennial Drive. The site is also visible in medium-range views from nearby private development along Grizzly Peak Boulevard, the Panoramic Hill residential neighborhood, and from a narrow view corridor through the adjacent UC campus that includes a portion of Memorial Stadium's north-facing seats.

Nearby and adjacent buildings include the National Center for Electron Microscopy (Building 72) and the Surface Sciences and Catalysis Laboratory (Building 66). The buildings in the Materials and Chemistry Research Planning Area are designed to take advantage of the long-range Bay views afforded by the Strawberry Canyon view corridor. Existing vantage points on the LBNL site within a quarter-mile of the proposed project site include locations along north-south axis streets such as Lawrence Road, at locations with higher elevations to the east of the site along Centennial Drive, and at traffic turn-outs. Views afforded from these vantage points include long-range views westwards towards the Bay, including historic landmarks such as the Golden Gate Bridge and Alcatraz Island, as well as the urban landscape of the adjacent Berkeley and UC campus development.

[8] This analysis incorporates true compass directions.

The Proposed Project would alter views of the mostly vacant site from nearby areas, including the adjacent UC campus and Panoramic Hill residential neighborhood. However, as the proposed development would be located between existing buildings of comparable height and massing, and vegetative screening would be incorporated, the change in landscape would not be discernible at a detailed local level, but would appear as a general increase in development of the LBNL site.

Although many trees on the immediate project site would be removed, the East Strawberry Canyon perimeter "buffer zone," consisting of existing and proposed plantings of tall, indigenous, and non-native tree stands, would be maintained to act as a visual buffer between Lab development and adjacent uses including the UC Berkeley Campus, nearby hillside residential areas, the Lawrence Hall of Science, and the UC Berkeley Botanical Garden. This would be in keeping with the visual buffer and landscaping directives of the 1987 LRDP. Furthermore, landscape planting areas within and adjacent to the site would be established to "unify the site visually, to relate the site to adjacent vegetation of the Berkeley Hills, and to provide compatibility between buildings and adjacent properties" (1987 LRDP, p.16). The conceptual landscaping plan for the project site consists of three zones: a crafted zone to be located to the south, natural zones to the west and east, and a parking zone to the north. The crafted zone would include an elevated terrace space between Building 66 and the Proposed Project, and would incorporate both hard and soft landscaping elements to physically and visually connect and unify the building uses. The natural zone includes fire-resistant ground cover for erosion control, as well as decorative plant materials that would be selected based on their indigenous, water-saving, and low-maintenance characteristics. Finally, the parking zone would be located atop the proposed below-grade utilities building to minimize the project's footprint and any potential disturbance to the existing natural environment.

As the Proposed Project would incorporate the above-mentioned landscaping details into the design of the project, and would be located between existing buildings of comparable height and massing, the proposed development would not have a substantial adverse effect on a scenic vista.

b) The California Department of Transportation (Caltrans) has designated 8.9 miles of Highway 24, from the east portal of the Caldecott Tunnel to the I-680 near Walnut Creek, as a Scenic Highway under the California Scenic Highway Program. In addition, the City of Berkeley has designated two scenic view corridors: Cedar Street and Dwight Way. Likewise, the City of Oakland has designated two scenic corridors: Skyline Boulevard and Shepherd Canyon Road. However, Highway 24 is about two miles south of the project site, Cedar Street is about one mile west, Dwight Way is about one mile southwest, Skyline Boulevard is about five miles southeast, and Shepherd Canyon Road is about 11 miles south. The project site would not be located within these scenic corridors, and would therefore have no impact on scenic corridors in the vicinity.

The Proposed Project would require removal of approximately three dozen trees to accommodate building footprints, roads, grading, and construction activities. Trees proposed for removal include Monterey pine, coastal redwood, coast live oak, and bay. The majority of the trees would be removed from the area adjacent to the western and southern faces of Building 72. Fewer than one dozen trees to be removed are downslope from the Building 66 rear parking lot. These trees occur in generally isolated patches. Much larger groves consisting of up to several hundred trees each in the general vicinity would remain untouched by the project, including a large screening grove of Canary Island pines to the west, a grove of screening redwoods to the southwest, a riparian corridor of various trees to the west and southwest, and several contiguous groves of oak, bay, acacia, and eucalyptus trees stretching from south of the project to the northeast.

The Proposed Project would transplant up to ten redwood or similarly sized trees along the western perimeter of Lee Road to provide screening for the project. Trees would be positioned to maximize screening values. In addition, replacement trees would be planted or transplanted in various locations in and surrounding the project site, particularly in the area between the Lee Road extension and the proposed Central Utility Plant building, which would receive about one dozen trees. All trees placed by the project would be irrigated as necessary. The LRDP EIR, as amended, accounts for the temporary impact of replacing more mature trees with younger, smaller trees in Impact III-F-2. Because the principal screening values and visual character of project-removed trees would be replaced, tree removal for this project would not cause a significant impact. Furthermore, while the LRDP EIR anticipates the loss of mature trees as the result of Lab development (Impact III-D-2), it stipulates that revegetation of the sort described here be included as part of all new projects (Mitigation Measure III-D-2a) to ensure that such impacts are less than significant.

c) The Proposed Project would result in a visual change to the project site because it would entail the construction of a six-story building (four stories cantilevered atop two basement levels) on a mostly undeveloped hillside site. Associated roof-top parking would be provided at a proposed nearby, below-grade utilities building. The project would be located in an area that is developed with existing science research buildings and associated uses of similar massing and height, and would incorporate buffer-zone landscaping, as described above, around the perimeter of the project site for screening purposes. Natural landscaping details include fire-resistant ground cover for erosion control, as well as decorative plant materials that blend with the surrounding wooded hillside. Furthermore, the Proposed Project would implement existing design guidelines, as described in the current LBNL LRDP, and would undergo design review by LBNL's architects and engineers prior to construction to ensure project conformance with the guidelines. The proposed building would incorporate architectural details that are similar to or that complement adjacent development; the building exterior materials would incorporate a non-reflective material to minimize glare and exterior maintenance, and the roof would consist of a single-sheet, co-polymer roofing membrane system with heat-reflective coating to reduce solar gain. Metallic screens would be located on the roof to conceal rooftop mechanical exhaust equipment. The current LRDP designates the project site as a "proposed addition," and anticipated that a laboratory building would be constructed there. As the project would conform to the current LRDP land use designation, and would incorporate site-sensitive landscaping and design principles into project design, the Proposed Project would be consistent with the 1987 LRDP, and furthermore would not substantially degrade the existing visual quality of the site and its surroundings beyond what was anticipated and analyzed in the LRDP EIR, as amended.

d) The Proposed Project would be located in a hillside area of the LBNL site that includes several other LBNL buildings that provide existing potential sources of light and glare, including the adjacent Buildings 72 and 66. The site is also located among local roadways including Lawrence Road and Lee Road, where street lighting projects light and glare during evening hours. The project includes an open-surface parking area atop a proposed, below-grade utilities building and anticipates outdoor lighting for operation purposes. The Proposed Project would include some fixed exterior lighting, particularly at building entrance points and at the surface parking area, to promote worker safety. The project would include a detailed exterior lighting plan that would be reviewed by LBNL's architects and engineers prior to construction. Furthermore, in keeping with LRDP EIR, as amended, Mitigation Measure III-F-2, the project would utilize non-reflective exterior materials, would adhere to a foot-candle maximum level at night, and would install night caps on all outdoor fixtures to minimize potential light and glare spillover impacts. As these actions would ensure conformance with the current LRDP

design guidelines as well as compatibility with surrounding land uses, the Proposed Project would not result in a significant new source of light or glare.

e) As noted in the discussion above, under the LRDP EIR, as amended, the Proposed Project would not exceed the Standards of Significance established for environmental effects related to aesthetics.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, mitigation measures: None. The Proposed Project would incorporate LRDP EIR, as amended, Mitigation Measures III-F-1a, III-F-1b, and III-F-2. As a result, no significant aesthetic or visual resources impacts would result from the Proposed Project.

Molecular Foundry Project-Specific Mitigation Measures: None required.

Sources:

California Department of Transportation (Caltrans), *California Scenic Highway Program*, http://www.dot.ca.gov/hq/LandArch/scenic/scpr.htm, accessed March 15, 2002.

City of Berkeley: Draft General Plan, *Urban Design and Preservation Element*, July 2001.

City of Oakland: Oakland General Plan, *Open Space Conservation and Recreation Element*, June 1996.

Lawrence Berkeley National Laboratory, *Draft and Final Environmental Impact Report for the 1987 Site Development Plan*, (SCH# [19]85112610), August 1987.

Lawrence Berkeley National Laboratory, *Draft and Final Supplemental Environmental Impact Report (SEIR) for the Proposed Renewal of the Contract Between the United States Department of Energy and the Regents of the UC for the Operation and Management of the Lawrence Berkeley Laboratory*, SCH# [19]91093068, prepared by the University of California and Lawrence Berkeley Laboratory, with the assistance of Ira Fink and Associates, Inc., September 1992.

Lawrence Berkeley National Laboratory, *Supplemental Environmental Impact Report Addendum for the Proposed Renewal of the Contract Between the United States Department of Energy and the Regents of the UC for the Operation and Management of the Lawrence Berkeley Laboratory*, SCH# [19]91093068, September 1997.

Lawrence Berkeley Laboratory: Long Range Development Plan, PUB- 5184, August 1987.

Site Visit to proposed Molecular Foundry site, ESA, March 13, 2002.

Smith Group, *Concept Design Report: Molecular Foundry Facility, Lawrence Berkeley National Laboratory*, April 1, 2002.

2. AGRICULTURAL RESOURCES

LRDP EIR, as amended:

The impact of LBNL projects on agricultural resources would be considered significant if it would exceed the following Standard of Significance, established by the LRDP EIR, as amended:

- Is located within an area designated as Important Farmland by Soil Conservation Service (U.S. Department of Agriculture).

The LRDP EIR, as amended, did not identify any potential impacts to agricultural resources.

Discussion:

a,b,c) The project site is located in the Materials and Chemistry Research Planning Area of the LBNL site, which is a developed area that does not include agricultural uses. In addition, the project site, as with the majority of developed land in the site vicinity including the City of Berkeley and the City of Oakland, is designated by the California Department of Conservation's Farmland Mapping and Monitoring Program as Urban and Built-Up Land (Department of Conservation, 1998). Therefore, the Proposed Project would not convert any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Furthermore, the Proposed Project would not conflict with the existing LBNL LRDP site land use designation, nor the City of Berkeley or City of Oakland General Plan land use designations. The project would therefore not involve any changes to the environment that could result in the conversion of farmland.

d) As noted in the discussion above, the Proposed Project would not exceed the Standard of Significance established for determining potential environmental effects to agricultural resources.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, mitigation measures: None.

Molecular Foundry Project-Specific Mitigation Measures: None required.

Sources:

City of Berkeley: Draft General Plan, *Land Use Element*, July 2001.

City of Oakland: Oakland General Plan, *Land Use and Transportation Element*, March 24, 1998.

Department of Conservation, Prime Farmland in Alameda County Map, 1998.

Lawrence Berkeley Laboratory: *Long Range Development Plan*, PUB- 5184, August 1987.

Project Description and Plans.

3. AIR QUALITY

LRDP EIR, as amended:

The 1997 SEIR Addendum reported that the Bay Area Air Basin (Air Basin) was in non-attainment of state standards for concentrations of particulate matter less than 10 microns in diameter (PM-10) and for ozone. In addition, the Air Basin was in non-attainment of federal standards for carbon monoxide (CO) in urban areas. The Air Basin was in non-attainment for the pollutants just named for the period including the 1987 LRDP EIR and the 1992 SEIR, and although it was temporarily redesignated as being in attainment with the ozone standard at the time the 1997 Addendum was approved, it shortly thereafter returned to a non-attainment designation in August 1998.

The LRDP EIR, as amended, uses significance thresholds established by the Bay Area Air Quality Management District (BAAQMD). These thresholds were current as of the last amendments to the LRDP (1992 and 1997). Two subsequent changes to the thresholds are the reduction from 150 pounds-per-day to 80 pounds-per-day and the addition of a 15-tons/year standard for the following criteria pollutant emissions: reactive organic gases (ROG), oxides of Nitrogen (NO_x), and PM-10. The LRDP EIR, as amended, demonstrated in its 1997 Addendum that it continues to fall below the new, more stringent standards.

The following relevant impacts to air quality were anticipated and analyzed pursuant to CEQA, as part of the programmatic LRDP EIR, as amended, from which this analysis is tiered:

Impact III-J-1:	Construction of new facilities projected in the 1987 LRDP would generate short-term emissions of air pollutants.
Impact III-J-2:	The Proposed Project at LBNL would generate long-term emissions of criteria air pollutants.
Cumulative Impacts:	Projects developed in the San Francisco Bay Area are expected to result in increased vehicle trips and increased emissions of pollutants from stationary and mobile sources that contribute to the Bay Area's non-attainment status. Project development would also result in an increase of LBNL TACs emissions and a contribution to cumulative TACs emissions in the region.

As a result of anticipated impacts to air quality, the following mitigation measures, adopted as part of the LRDP EIR, as amended, are already required for the Proposed Project, and are therefore incorporated as part of the Proposed Project's description:

Mitigation Measure III-J-1:	Construction contract specifications would require that during construction exposed surfaces would be wetted twice daily or as needed to reduce dust emissions. In addition, contract specifications would require covering of excavated materials.
Mitigation Measure III-J-2:	LBNL will design building ventilation systems to minimize emission of criteria air pollutants following compliance with all applicable regulatory requirements (e.g., New Source Review). Although this impact was not

found to have exceeded the BAAQMD's threshold for significance, the LRDP EIR, as amended, conservatively identified this impact as not fully mitigated by Mitigation Measure III-J-2 "for the purposes of this SEIR."

Cumulative Impacts: The LRDP EIR, as amended (1992 SEIR), found that mitigation measures that would serve to minimize project impacts also would serve to reduce the project's contribution to cumulative toxic air contaminant levels. It also found that any regional measures intended to reduce toxic air contaminants were not within the jurisdiction of LBNL's management to implement. Although this TAC impact was not found to have met BAAQMD's threshold of significance or CEQA's Appendix G criteria for a significant cumulative impact, the LRDP EIR, as amended, conservatively identified this cumulative impact as not fully mitigated by the measures listed above "for the purposes of this SEIR."

In 1992, The Regents of the University of California adopted a Statement of Overriding Considerations for long-term ozone emissions and cumulative TACs emissions impacts as identified in the SEIR. The 1997 Addendum to the 1992 SEIR found that TAC emissions associated with development at LBNL under the LRDP through the year "20XX" would not cause ozone and TAC emissions substantially more severe than those analyzed in the 1992 SEIR because emissions would remain below the SEIR standards of significance

Setting:

The following information updates the existing conditions related to air quality in the San Francisco Bay Area Air Basin. The project site is located in the City of Oakland, within the boundaries of the San Francisco Bay Area Air Basin. The Bay Area's moderate climate steers storm tracks away from the region for much of the year. Berkeley's proximity to the refreshing onshore breezes stimulated by the Pacific Ocean provide for generally very good air quality at LBNL. However, during the ozone smog season (summer and fall), transport studies have shown that emissions generated in Oakland and Berkeley are often transported to other regions of the Bay Area and beyond (e.g., Central Valley) that are more conducive to the formation of ozone smog. In the winter, reduced solar energy and cooler temperatures diminish ozone smog formation, though increase the likelihood of carbon monoxide formation.

The federal Clean Air Act of 1970 established maximum allowable concentration criteria standards for six ambient air pollutants - ozone (smog), carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. These criteria pollutant standards are shown in Table VIII.3a, below. Each of these standards was set to meet specific public health and welfare criteria. Individual states were given the option to adopt more stringent state standards for criteria pollutants and to include other pollutants. California has done so with many pollutants through its own clean air act. The Bay Area Air Quality Management District is the regional agency with regulatory authority over stationary sources in the Bay Area, while the California Air Resources Board (CARB) has regulatory authority over mobile sources such as construction equipment, trucks, and automobiles throughout the state. The BAAQMD has the primary responsibility to meet and maintain the state and federal ambient air quality standards in the Bay Area.

These regulated ambient air pollutants and a brief description of their predominant sources and effects are provided in Table VIII.3a.

Both the state and federal Clean Air Acts require areas to be classified either as either *attainment* or *non-attainment* for each criteria pollutant, based on whether or not the state and national standards have been achieved. Therefore, areas in California have two sets of attainment/non-attainment designations: one for the federal standards and one for the state standards. The Bay Area Air Basin is currently designated as nonattainment for state ozone standards and the federal 1-hour ozone standard, although ozone levels measured in the Berkeley and Oakland area have not exceeded the standard in the past four years. Ozone, and ozone precursors such as reactive organic compounds and oxides of nitrogen, are the pollutants of greatest concern in the Air Basin. The Air Basin is also designated as nonattainment for the state PM-10 standard. Urbanized portions of the Bay Area (specifically known as the San Francisco - Oakland - San Jose federal planning area) are designated "maintenance" with respect to the federal carbon monoxide standard. The "maintenance" designation denotes that the area, now "attainment," had once been designated as "nonattainment." The Air Basin is designated as either attainment or unclassified for all other pollutants.

Tables VIII.3b and VIII.3c show ambient levels of ozone and carbon monoxide measured at BAAQMD's monitoring station on Alice Street in Oakland. This site is representative of the air in the vicinity of Berkeley Lab. Table VIII.3d shows PM-10 levels measured in Fremont, the nearest monitoring station in Alameda County that measures PM-10. Table VIII.3e shows trends in regional exceedances of the federal and state ozone standards. Because of the exceedances, ozone is the pollutant of greatest concern in the Bay Area. Bay Area counties experience most ozone exceedances during the period from April through October. Construction equipment, building emission sources (such as heaters), and motor vehicles traveling to LBNL would emit the ozone precursors ROG and NOx (defined in Table VIII.3a, above). These emissions may photochemically react in the presence of sunlight and warm temperatures, creating ozone smog. But often, because of wind patterns, this transformation occurs some miles distant. Thus, the project's emissions may not have a local impact and may be very small in terms of quantities, but could contribute to existing violations of state and federal ozone standards.

Hazardous and Toxic Air Emissions Sources

There are no known facilities within a ¼-mile of the LBNL site boundary that use acutely hazardous substances in excess of threshold planning quantities (SARA Title III, Community Right to Know). Consequently there is no significant impact in the area from use of acutely hazardous substances by businesses, including LBNL. "Acutely hazardous material" means any material defined pursuant to subdivision (a) of Section 25532, California Health and Safety Code.

State environmental law requires that air districts create an inventory of facilities with potential to emit specified Toxic Air Contaminants (TAC), and make this information available to the public upon request. The BAAQMD's 2000 Toxic Air Contaminant Control Program Annual Report calculates that the annual excess cancer risk in the Bay Area is about 167 per million people from stationary sources, and about 450 in a million from diesel exhaust. Thus, diesel emissions create about 70% of toxic and cancer-causing emissions found in ambient air. LBNL updates its TAC inventories each year during renewal of operating permits, which is required of all regulated facilities in the Bay Area.

TABLE VIII.3a
AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS EFFECTS AND SOURCES, PARTS PER MILLION (ppm) OR MICROGRAMS PER CUBIC METER (ug/m^3)

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone (O_3)	1 hour	0.09 ppm	0.12 ppm	Irritation and possibly permanent lung damage.	Motor vehicles.
	8 hours	---	0.08 ppm		
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Deprives body of oxygen in the blood. Causes headaches and worsens respiratory problems.	Primarily gasoline-powered motor vehicles. Internal combustion engines.
	8 hours	9 ppm	9.0 ppm		
Nitrogen Dioxide (NO_2)	Annual Average	---	0.05 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum-refining, industrial sources, aircraft, ships, and railroads.
	1 hour	0.25 ppm	---		
Sulfur Dioxide (SO_2)	Annual Average	---	0.03 ppm	Irritates and may permanently injure respiratory tract and lungs. Can damage plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	---		
	24 hours	0.04 ppm	0.14 ppm		
Suspended Particulate Matter (PM-10 PM-2.5)	Annual Geometric Mean	30 ug/m^3 (PM-10)	65 ug/m^3 (PM-2.5)	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays).
	Annual Arithmetic Mean	---	50 ug/m^3 (PM-10)		
	24 hours	50 ug/m^3 (PM-10)	150 ug/m^3 (PM-10) 15 ug/m^3 (PM-2.5)		
Lead	Monthly	1.5 ug/m^3	---	Disturbs gastrointestinal system and causes anemia, kidney disease, and neuromuscular and neurologic dysfunction (in severe cases).	Present source: lead smelters, battery manufacturing and recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	---	1.5 ug/m^3		
Sulfates (SO_4)	24 hours	25 ug/m^3	---	Similar to sulfur dioxide	Industrial processes, refineries.
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm (42 ug/m^3)	---	Very pungent odor similar to rotten eggs.	Annoying and irritating – high concentrations fatal.

SOURCE: California Air Resources Board, *Ambient Air Quality Standards*, January 25, 1999.

TABLE VIII.3b
HIGHEST 4 DAILY MAXIMUM HOURLY OZONE MEASUREMENTS AND NUMBER OF DAYS ABOVE THE HOURLY STANDARDS AT OAKLAND (822 Alice Street)
parts per million (ppm)

	1998		1999		2000		2001	
High	Apr 21	0.056	Oct 10	0.081	May 21	0.072	May 30	0.066
2nd High	Jun 14	0.049	Jul 11	0.076	Sep 17	0.069	May 6	0.059
3rd High	Mar 20	0.047	Sep 30	0.069	Apr 2	0.055	May 7	0.053
4th High	Apr 12	0.047	Oct 16	0.065	Apr 1	0.053	May 31	0.051
Days above State Standard of 0.09 ppm		0		0		0		0
Days above National Standard of 0.12 ppm		0		0		0		0

SOURCE: California Air Resources Board web site at www.arb.ca.gov April 2002

TABLE VIII.3c
HIGHEST 4 DAILY MAXIMUM 8-HOUR CARBON MONOXIDE AVERAGES AND NUMBER OF DAYS ABOVE THE 8-HOUR STANDARD AT OAKLAND (822 Alice Street)
parts per million (ppm)

	1998		1999		2000		2001	
High	Dec 28	4.58	Dec 27	5.23	Jan 5	2.69	Jan 3	3.98
2nd High	Dec 29	4.19	Dec 24	4.53	Jan 12	2.36	Jan 5	3.88
3rd High	Dec 18	3.80	Dec 15	4.30	Sep 13	2.34	Feb. 4	3.29
4th High	Dec 11	3.68	Dec 29	4.20	Jan 4	2.31	Jan. 4	3.18
Days above State Standard		0		0		0		0
Days above National Standard		0		0		0		0

SOURCE: California Air Resources Board web site at www.arb.ca.gov April 2002

TABLE VIII.3d
HIGHEST 4 DAILY PM-10 MEASUREMENTS AND
ANNUAL PM-10 STATISTICS AT FREMONT-CHAPEL WAY STATION
micrograms per cubic meter (ug/m^3)

	1998		1999		2000		2001	
High	Dec 25	62.7	Oct 21	87.9	Nov 20	58.1	Jan 7	57.6
2nd High	Apr 29	45.1	Oct 15	51.5	Jan 7	50.0	Jan 1	54.5
3rd High	Oct 20	40.8	Dec 26	50.2	Dec 20	48.1	Jan 19	43.6
4th High	Nov 13	37.4	Sep 27	48.8	Dec 8	41.8	May 19	38.1

SOURCE: California Air Resources Board web site at www.arb.ca.gov April, 2002

TABLE VIII.3e
SUMMARY OF OZONE DATA SUMMARIES FOR THE
SAN FRANCISCO BAY AREA AIR BASIN, 1990–2000

	Number of Days Standard Exceeded[a]			*Ozone Concentrations in ppm*[b]	
Year	**State 1 hr**	**Federal 1 hr**	**Federal 8 hr**	*1 Hour* ***(Max 1 hr)***	*8 Hour* ***(Max 8 hr)***
2001	15	1	7	0.13	0.100
2000	12	3	9	0.15	0.144
1999	20	3	4	0.16	0.122
1998	29	8	16	0.15	0.111
1997	8	0	0	0.11	0.084
1996	34	8	14	0.14	0.112
1995	28	11	18	0.16	0.115
1994	13	2	4	0.13	0.097
1993	19	3	5	0.13	0.112
1992	23	2	6	0.13	0.101
1991	23	2	6	0.14	0.108
1990	14	2	7	0.13	0.105

a This table summarizes the data from all of the monitoring stations within the Bay Area.
b ppm = parts per million.

SOURCE: California Air Resources Board web site at http://www.arb.ca.gov/aqd/y2d_oz/d_y2doz.htm, October 31, 2001.

Discussion:

a) The Proposed Project would be located in an area designated as nonattainment with respect to applicable state and federal ozone standards and the state PM-10 standard. As required by state and federal laws, there are three plans for the Bay Area Air Basin developed in part by BAAQMD to meet federal and state air quality planning requirements. They are:

- Ozone Attainment Plan for the 1-Hour National Ozone Standard developed to meet federal ozone air quality planning requirements;
- Bay Area 2000 Clean Air Plan, the most recent triennial update of the *1991 Clean Air Plan* developed to meet planning requirements related to the state ozone standard; and

The 1996 Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas, developed by the air districts with jurisdiction over the ten planning areas including the BAAQMD to ensure continued attainment of the national carbon monoxide standard. In June 1998, the U.S. EPA approved this plan and designated the ten areas to attainment. The maintenance plan was revised in October 1998.

- Proposed Project

Construction Emissions

As stated in the *Project Description*, the proposed Molecular Foundry building and roadway segment would be constructed on a site created by cutting and filling about 32,000 cubic yards of earth and rock. All excavated material would be used on site, and there would be no trucking material off-site (balanced cut and fill). Grading would occur from about April to September 2004. Equipment would be standard diesel-powered loaders, excavators, bulldozers, and trucks. No blasting would occur. Any building foundation piers would be drilled rather than driven. Utility relocation, including trenching, would occur from about February 2004 to February 2006.

Trucks would arrive on-site delivering building materials and concrete for foundations. Building construction might involve compressors, pneumatic equipment such as drills and nut drivers, cranes, forklifts, and other equipment. A rotary drill rig, likely powered by diesel engines, would bore holes for pilings as part of the foundation.

Construction activities associated with the project would create PM-10 and ozone precursor emissions. However, there are no published construction emission thresholds, and the BAAQMD has accounted for construction emissions in its Clean Air Plan. In addition, air impacts due to LBNL construction activities consistent with LRDP growth projections were analyzed in the LRDP EIR, as amended; the proposed Molecular Foundry project is consistent with the LRDP and the EIR and is covered under that analysis. With the implementation of LRDP EIR, as amended, Mitigation Measure III-J-1, there would be no significant impact from construction-related fugitive dust emissions.

Operational Emissions

Project operation would result in emissions primarily from the increase in motor vehicle trips to the site and, to a lesser extent, from other area and on-site stationary sources (such as natural gas combustion for space and water heating, and landscaping). The project would also create increased electric energy demand from air conditioning and heating equipment. Electricity demand requires more fossil fuel combustion at regional power plants. This would not affect the immediate area but would add incrementally but not measurably to the regional pollutant burden of ozone precursors, particularly oxides of nitrogen. A new diesel emergency generator and an associated 3,000-gallon above ground fuel tank are proposed as part of the project. Emissions associated with this generator would be accounted for and limited by the Permit to Operate that would be required from the BAAQMD. BAAQMD would perform a risk assessment on air emissions from this generator as part of reviewing the permit application to ensure that impacts do not exceed District significance thresholds.

Mobile source emissions would include emissions from trucks and delivery vehicles, and employee commute trips. Approximately 130 new employees and students would use the Molecular Foundry, approximately 95 of whom would be potential new "drivers" to the site.[9] LBNL offers carpooling privileges and shuttle bus services to its employees to reduce driving of personal vehicles. The BAAQMD considers emissions from projects generating fewer than 2,000 trips per day to be less than significant, since this number of trips is not likely to exceed the 80 pounds per day significance threshold established by the District for ROG, NOx, and PM-10. The Proposed Project would generate well below 1,000 trips per day, and is estimated to result in far less than the 80 pounds per day significance threshold established by BAAQMD.

Project-related emissions would not be expected to conflict with or obstruct implementation of any applicable air quality plans, including the Ozone Attainment Plan, the Bay Area 2000 Clean Air Plan, and the Carbon Monoxide Maintenance Plan. In addition, the Proposed Project would not violate any applicable air quality standard or contribute substantially to any existing or projected air quality violations. Furthermore, it would not result in a cumulatively considerable net increase of ozone and its precursors (i.e., ROG and oxides of Nitrogen), or PM-10. Air impacts due to LBNL operational activities consistent with LRDP growth projections were analyzed in the LRDP EIR, as amended; the proposed Molecular Foundry project is consistent with the LRDP and the EIR and is covered under that analysis.

Hazardous and Toxic Air Emissions

The proposed laboratory would use many types of chemicals, most of which would be kept and used on-site in small quantities. The laboratory has written procedures to guide personnel in specific methods of storing these chemicals in correct containers and safety cabinets. Individual laboratories would contain fume hoods—for a combined building total of 48 fume hoods—which would be vented to the outside atmosphere at the building rooftop. Discharge from the fume exhaust would meet vertical velocity and stack height requirements. LRDP EIR, as amended, Mitigation Measure III-J-2 would require construction of a building ventilation system to minimize criteria air pollutants. Wind analysis would be conducted during project design to ensure that placement of exhaust stacks on the roof would not cause re-entrainment of exhaust into fresh air intake ducts, which would be located on or near the rooftop of the Molecular Foundry building. A Preliminary Hazard

[9] Out of 137 Molecular Foundry occupants, 6 would be "directors" currently on staff at LBNL whose current positions would not be replaced; approximately 36 would be UC Berkeley graduate students who would not have driving privileges at LBNL. This would leave about 95 new potential drivers among the Molecular Foundry staff.

Analysis Report is under preparation for the Proposed Project by LBNL and will be completed at the time of final project design.

Two BAAQMD programs evaluate the health risks associated with routine TAC emissions from any activity. First, and most applicable to the Molecular Foundry, BAAQMD's permitting program identifies activities that would exceed risk-based TAC emission thresholds from new or modified sources. The need for an operating permit for laboratory activities would be assessed from more reliable emissions estimates made closer to actual construction of the facility, although it is expected that the Molecular Foundry would qualify for BAAQMD's permit exemption for research laboratories, like the other research activities found at LBNL. The purpose of this permitting process is to ensure that proposed emissions are less-than-significant, and the BAAQMD would impose project conditions, if necessary, to reduce projected emissions until they conform to District significance standards before issuing a permit. Second, BAAQMD's Air Toxics Hot Spots Program updates a facility-wide TAC emissions inventory once each year during the renewal of operating permits. To date, LBNL TAC emissions fall below the thresholds for incorporation into the BAAQMD Toxic Inventory Database.

The Molecular Foundry laboratories would contain small amounts of chemicals similar to those found in other LBNL scientific facilities. These types of chemicals are those typically used in hospitals and medical and research laboratories and pose little environmental risk when used in typical research quantities following accepted research procedures. The completed Hazard Analysis Report will identify in detail the toxic substances that would be used and stored in each laboratory, and the associated types of experiments that would be conducted. These include organic solvents and toxic metals, such as cadmium and arsenic. No solid chemical would exceed more than a few hundred grams (i.e., probably well less than one pound) and no liquid would exceed more than a gallon. Also, only a few small gas cylinders containing flammable or toxic substances would be stored on-site. This is consistent with the nature of the experiments that deal with substances and properties on a micro- and nano-scale. Since the amounts of chemicals in the laboratory would be low, there would be no quantifiable air quality public health risk from laboratory activities.[10]

The Proposed Project would not create or substantially contribute to a significant TAC impact. Emissions of TACs are regulated by their projected risk to any individual located outside the LBNL property, regardless of the land use designation (e.g., commercial, residential, or industrial). The risk from TAC emissions is expected to remain below these BAAQMD thresholds. The buffer areas and University lands that surround LBNL further lower the risk levels at the nearest residential areas, which are approximately one-third mile to the south. At that distance, operational TAC emissions from the Proposed Project are expected to be immeasurable. According to the BAAQMD CEQA Guidelines, a project is expected to have a less-than-significant cumulative TAC impact if it does not pose an individually significant TAC impact and is consistent with the governing general plan. That general plan should provide for appropriate buffer zones to protect sensitive receptors from TAC emissions. The LBNL LRDP maintains appropriate designated buffer areas between the proposed Molecular Foundry site and the nearest residential areas. The Proposed Project therefore meets the BAAQMD requirements.

[10] Current estimates indicate that fenceline concentrations of TAC emissions from the proposed project would be so low as to be immeasurable. In fact, preliminary screening estimates indicate that the entire expected annual chemical inventory of the proposed Molecular Foundry would be so small that, were it to be emitted at a 100% annual rate (a physically impossible, conservative scenario), the vast majority of these chemicals would be unlikely to even approach BAAQMD regulatory thresholds at the LBNL fenceline.

Furthermore, the Proposed Project is expected to neither create nor measurably contribute to any local toxic air contaminant "hot spots," as defined by the BAAQMD. "Hot spots," pursuant to California Assembly Bill 2588, are regions, either small or large, where individual or cumulative levels of TAC exceed safety or significance risk thresholds. Annually, LBNL provides information to BAAQMD to help this agency determine the existence of any hot spots in the Bay Area. There are no identified hot spots in the area to which the Proposed Project would measurably contribute.

LRDP EIR, as amended, Mitigation Measures IV-K-1, IV-K-2a, IV-K-2b, IV-K-3, IV-K-5, and IV-K-6 would assure adequate shipping, treatment, storage and/or disposal of hazardous wastes, continuation of LBNL's waste minimization programs, use of licensed hazardous waste haulers, implementation of employee communication and training requirements for hazardous wastes, and continued updating of LBNL's emergency preparedness and response programs on an annual basis (additional discussion provided in 6. *Hazards and Hazardous Materials*, below).

Therefore, residents near the project would not be exposed to significant levels of hazardous air pollutants as a result of the new laboratory being built and used for its intended purpose.

b) Compliance of the project with the LRDP EIR, as amended, Mitigation Measure III-J-1, as discussed above, would ensure that project construction would not lead to violation of any air quality standard or contribute substantially to an existing or projected regional air quality exceedance. As also described above, operational emissions of the project would be well below the thresholds established by the BAAQMD for project-level analysis. Therefore these emissions would not lead to or contribute substantially to an exceedance of any ambient air quality standard.

c) As discussed above, operational emissions from project-related motor vehicle trips and on-site stationary sources would be below the BAAQMD thresholds of 80 pounds per day for ROG, NOx and PM-10. Therefore the contribution of the Proposed Project to any cumulatively considerable impact due to development in Oakland, Berkeley, and in the rest of the Bay Area would be less than significant.

d) During construction, the Proposed Project could expose nearby LBNL employees to fugitive dust. However, implementation of LRDP EIR, as amended, Mitigation Measure III-J-1 would meet BAAQMD suggested measures to reduce the impact to a less than significant level. During project operations, as discussed above, the project would generate less than significant levels of air pollutants.

e) The project would contain no sources capable of creating any objectionable odors and, therefore, the project would not create objectionable odors.

Cumulative Impacts:

Although cumulative air impacts are covered under the 1992 Statement of Overriding Consideration by The Regents, the Proposed Project would not result in any significant cumulative air quality impacts. It would not pose any individually significant air impacts. It would be consistent with the LBNL Long Range Development Plan, and would neither conflict with nor obstruct implementation of the Ozone Attainment Plan, the Bay Area 2000 Clean Air Plan, nor the Carbon Monoxide Maintenance Plan. The Proposed Project would not violate any applicable air quality standard or contribute substantially to any existing or projected air quality violations. It would not result in a

cumulatively considerable net increase of any criteria pollutant, including ozone and its precursors (i.e., ROG and oxides of Nitrogen), or PM-10. No construction or operational emissions—either criteria pollutants or toxic air contaminants—would be expected to exceed any regional, state, or federal thresholds of significance. As operational details and estimates are further developed, the Molecular Foundry project would undergo review and permitting processes from BAAQMD for operational emissions and potential emergency diesel generator emissions. The Proposed Project would implement feasible measures to further reduce construction and operational air impacts of construction and operations and would prohibit significant health risks through its discretionary permitting authority.

The Proposed Project would not create or substantially contribute to a significant TAC impact. Project emissions of TACs are expected to be very low in general and negligible at the distance of the nearest residential areas. Moreover, there are no nearby significant ambient TAC concentrations to which the project might cumulatively contribute, and any contribution by the Proposed Project would not be cumulatively considerable in any event.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, mitigation measures: None. The Proposed Project would incorporate LRDP EIR, as amended, Mitigation Measures III-J-1 and III-J-2. As a result, the project would result in no significant impacts to air quality resulting from construction and generation of criteria pollutants as a part of the laboratory operations.

Molecular Foundry Project-Specific Mitigation Measures: None required.

Sources:

Bay Area Air Quality Management District, *CEQA Guidelines*, 1999.

California Air Resources Board air quality designations: http://www.arb.ca.gov/desig/desig.htm.

California Air Resources Board air quality plans: http://www.arb.ca.gov/planning/planning.htm.

Bay Area Air Quality Management District Air Plans: http://www.baaqmd.gov/planning/cap/aqp.htm.

Bay Area Air Quality Management District, *2000 Toxic Air Contaminant Control Program Annual Report*, December 2001, http://www.baaqmd.gov/permit/toxics/report.htm.

LBNL, Memorandum: *Environmental Sampling at the Proposed Molecular Foundry Site*, February 1, 2002.

Lawrence Berkeley National Laboratory, *Draft and Final Environmental Impact Report for the 1987 Site Development Plan*, (SCH# [19]85112610), August 1987.

Lawrence Berkeley National Laboratory, *Draft and Final Supplemental Environmental Impact Report (SEIR) for the Proposed Renewal of the Contract Between the United States Department of Energy and the Regents of the UC for the Operation and Management of the Lawrence Berkeley Laboratory*, SCH# [19]91093068, prepared by the University of California and Lawrence Berkeley Laboratory, with the assistance of Ira Fink and Associates, Inc., September 1992.

Lawrence Berkeley National Laboratory, *Supplemental Environmental Impact Report Addendum for the Proposed Renewal of the Contract Between the United States Department of Energy and the Regents of the UC for the Operation and Management of the Lawrence Berkeley Laboratory*, SCH# [19]91093068, September 1997.

Smith Group, *Concept Design Report, Molecular Foundry Facility, Lawrence Berkeley National Laboratory*, April 15, 2002.

4. BIOLOGICAL RESOURCES

LRDP EIR, as amended:

An impact of any LBNL project on biological resources would be considered significant if it exceeded the following Standards of Significance, established by the LRDP EIR, as amended:

- Substantially reduce the number or restrict the range of a rare, endangered, or threatened plant or animal species;
- Cause fish or wildlife levels to drop below self-sustaining levels; or
- Adversely affect significant riparian lands, wetlands, marshes, or other wildlife habitats.

The following relevant impacts to biological resources have been anticipated and analyzed pursuant to CEQA, as part of the programmatic LRDP EIR, as amended, from which the present analysis is tiered:

Impact III-D-1:	Continued University operation of LBNL, including continued implementation of the 1987 LRDP, is not expected to restrict the number or reduce the range of any rare, endangered, or threatened plant or animal species, or to cause existing fish or wildlife populations to drop below self-sustaining levels.
Impact III-D-2:	Continued University operation of LBNL, including continued implementation of the LRDP, will result in the loss of some vegetation, including potential loss of mature trees and areas with some habitat for non-critical species.

As a result of anticipated impacts to biological resources, the following mitigation measures, adopted as part of the LRDP EIR, as amended, are already required for the Proposed Project, and are therefore incorporated as part of the Proposed Project's description:

Mitigation Measure III-D-2a:	Revegetation of disturbed areas, including slope stabilization sites, using native shrubs, trees, and grasses will be included as a part of all new projects.

Mitigation Measure III-D-2b:	Invasion of opportunistic colonizer trees and shrubs will be controlled. A maintenance program for controlling further establishment of eucalyptus, green wattle acacia, French broom, cotoneaster, and other opportunistic colonizer shrubs and trees in disturbed areas on-site will be undertaken. Herbicides will not be used for this purpose.
Mitigation Measure III-D-2c:	Removal of native trees and shrubs will be minimized. (To the greatest extent possible, the removal of large coast live oak, California bay, and Monterey pine trees will be avoided.)
Mitigation Measure III-D-2d:	Disturbance to the site perimeter buffer zones will be minimized.
Mitigation Measure III-D-2e:	LBNL activity and encroachment in Blackberry Canyon will be minimized.

Discussion:

a) The Proposed Project is located in the steep ridges and draws on the western side of the Oakland-Berkeley hills, in the general area of Blackberry and Strawberry Canyons and within the Strawberry Canyon watershed. No Name Creek and Chicken Creek, tributaries to Strawberry Creek, are located downslope from the project site, and Strawberry Creek itself is approximately 0.1 miles to the southeast at its closest point to the site. Vegetation on and adjacent to the Proposed Project site is primarily non-native annual grassland, and the site is located between existing multi-story buildings to the northwest and southeast.

Review of the California Natural Diversity Database (CNDDB) (2002) for the Oakland East, Oakland West, Richmond, and Briones Valley 7.5 minute quadrangles indicates a generally low potential for adverse impacts to legally protected animal species. Many of the species on the list are associated with either wetlands or salt-water habitats within these quadrangles, and the non-native grassland characteristic of the site does not provide the required habitat for these particular species.

The Alameda whipsnake (*Masticophis lateralis euryxanthus*; listed as threatened under both federal and state regulations) is found in shrub communities and adjacent habitats (U.S. Fish and Wildlife Service, 2000). Habitats adjacent to brush communities may be crucial to Alameda whipsnakes, which remain in grassland habitats near shrub areas for up to several weeks at a time (U.S. Fish and Wildlife Service, 2000). Other typical habitat elements for this species include rock outcrops, which provide areas where prey (particularly lizards) may be found and where whipsnakes may find shelter.

The project site is close to designated critical habitat for the Alameda whipsnake (it is approximately 500 feet north of the nearest critical habitat boundary). After it conducted site visits during the summer of 2000, the U.S. Fish and Wildlife Service (USFWS) determined that the future proposed Molecular Foundry project site and surrounding areas, along with certain other LBNL areas, should be excluded from its final critical habitat listing (U.S. Fish and Wildlife Service, 2000). Since the Proposed Project site was excluded from the final listing by the USFWS, it is not considered to be critical habitat of the Alameda whipsnake. The closest shrub community to the Proposed Project site is an area of north coastal scrub that is approximately 1500 feet to the east and separated from it by roads and other development within the LBNL site (McGinniss, 1996). Alameda whipsnakes can be found well away from shrub communities. However, the habitat value of grasslands on the

project area is attenuated by the distance from the shrub area, the potential dispersal barrier produced by existing development, and the lack of rock outcrops both on the site and in the surrounding area. On-site grassland habitat value is further reduced by annual vegetation management for fuel reduction purposes, which includes reduction of grass and shrub heights, either with goats or by mechanical means, and removal of non-native trees within 100 feet of existing buildings. Such reduction of vegetative cover further reduces the possibility that whipsnakes would use the area as a dispersal corridor.

A number of protected butterfly species also potentially occur in the project area. However, since the site is dominated by non-native grassland, with no larval host plants present, suitable habitat does not exist for the Bay checkerspot butterfly (*Euphydras editha bayensis*; federally listed as threatened) or the Callipe silverspot butterfly (*Speyeria callippe callippe*; federally listed as endangered). The monarch butterfly (*Danaus plexippus*; a state special status species) roosts in eucalyptus groves; however, no suitable groves are located near the site.

The site lies upslope from the Chicken Creek and Strawberry Creek drainages; therefore, it is possible that the California red-legged frog (*Rana aurora draytonii*; federally listed as threatened and a State species of special concern), the western pond turtle (*Clemmys marmorata*, a State species of special concern), and the foothill yellow-legged frog (*Rana boylii*, a State species of special concern) might be present in the general area of the project site. However, the site itself does not provide suitable habitat for these species, and it is unlikely that they would migrate through it, since the site is not located between creek drainages and other suitable habitat. Another amphibian, the California tiger salamander (*Ambystoma californiense*, a State species of special concern) requires seasonal pools for breeding, but the site and its surroundings do not provide suitable habitat. The Berkeley kangaroo rat (*Dipodomys heermani berkeleyensis*, a State special status species) is apparently extinct, and in any event the site provides no suitable habitat, since the density of the grassland vegetation is greater than is generally suitable for kangaroo rats.

The project site potentially provides a small amount of foraging habitat for golden eagles (*Aquila chrysaetos*, a State species of special concern) and for the white-tailed kite (*Elanus leucurus*, a State special status species). Although the amount of existing development and activity proposed in the area of the site will lower its value as foraging habitat, the site is relatively small. Consequently, no significant adverse impacts to these species are expected.

A thorough review and analysis of special status plant species listed by the CNDDB (2002) and CNPS (2002) databases as occurring in the Oakland East, Oakland West, Richmond, and Briones Valley USGS 7.5 minute quadrangles indicates that the likelihood of adverse project impacts for most of the species listed is extremely low due to the following reasons:

- suitable habitat for a species either never existed on the project site or no longer does due to historical and ongoing disturbance of soils and vegetation;
- a species is not documented within the general vicinity of the project site, i.e., the western side of the Oakland-Berkeley Hills;
- only historical occurrences for a species are documented;
- a species has been extirpated from the quadrangle or county.

There are two special status plants listed in the databases as occurring further downslope from the project site in Strawberry Canyon. The first of these, western leatherwood (*Dirca occidentalis*) has not been found within the project footprint. This shrub occurs almost exclusively on north-facing slopes, as an element of coastal scrub or oak woodland communities. The second, robust monardella (*Monardella villosa* ssp. *globosa*), is documented historically from the area. However, this species is generally found in chaparral and no suitable habitat remains within or near the project footprint.

Although the site is not located in USFWS-designated critical habitat, due to the potential for Alameda whipsnake movement into the project area, mitigation measures would be prudent to ensure that whipsnakes are protected to the greatest extent possible during project construction. Without proper mitigation, this would be considered a potentially significant impact for the purposes of this analysis. The mitigation measures presented below are based on avoidance measures developed in informal consultation with USFWS during site surveys for the water tank and fire road realignment components of the LBNL Sitewide Water Distribution Upgrade project. The incorporation of these mitigation measures into the project resulted in an informal determination that the Sitewide Water Distribution Upgrade project would not be likely to adversely affect the Alameda whipsnake or its critical habitat (USFWS 2001; LBNL NEPA/CEQA Program 2001; J. Philliber, pers. com. 2002)

Molecular Foundry Mitigation Measure 1: Prior to the initiation of excavation, construction, or vehicle operation, the project area shall be surveyed by a designated monitor, trained in Alameda whipsnake identification and ecology by a qualified biologist, to ensure that no Alameda whipsnakes are present. This survey shall not be intended to be a protocol-level survey, but rather one designed to verify that no snakes are actually on site.

Molecular Foundry Mitigation Measure 2: All on-site workers shall attend an Alameda whipsnake information session conducted by the designated monitor. This session shall cover identification of the species and procedures to be followed if an individual is found on site.

Molecular Foundry Mitigation Measure 3: All lay-down and deposition areas shall be inspected each morning by the designated monitor to ensure that Alameda whipsnakes are not present. All construction activities that take place on the ground shall be performed in daylight hours. Vehicle speed on site shall not exceed 15 miles per hour. Construction materials, soil, construction debris, or other material shall be deposited only on areas where vegetation has been mowed and any snakes present would be readily visible.

Molecular Foundry Mitigation Measure 4: The site is subject to annual vegetation management involving the close-cropping of all grasses and ground cover on the project area; this management shall be done prior to initiation of construction. Re-mowing shall be done if grass or other vegetation on the project site becomes high enough to conceal whipsnakes during the construction period.

Implementation of the above project-specific mitigation measures would reduce a potentially significant impact to a less-than-significant level.

b) Although the project is located within 500 feet of Chicken Creek, there would be no adverse effects on the creek or the riparian habitat lining its banks, nor would the project result in any impacts to the riparian corridor along Strawberry Creek. Standard erosion control measures would be used to ensure that sediment generated by construction would not enter the creeks. Additional runoff generated by the new building would be relatively

minimal and would be routed into existing storm drains. The CNDDB lists several sensitive natural communities as occurring in the USGS quadrangles searched, including northern maritime chaparral, serpentine bunchgrass, and valley needlegrass grassland. However, none of these communities occur on or in the vicinity of the project site.

c) The Proposed Project would not result in adverse effects on federally protected wetlands, as no wetlands or streams occur on or in the immediate vicinity of the project site.

d) Due to the fact that the proposed project site and its surroundings have been subject to frequent and ongoing disturbance and the daily presence of humans in and around site, the project is not expected to interfere with the movement of resident or migratory wildlife, nor is it expected to interfere with the use of native wildlife nursery sites. The project site is not part of an established wildlife corridor.

e) The LBNL site is generally not subject to local ordinances and policies; nevertheless, the project would not conflict with any local policies or ordinances protecting biological resources.

f) There are no Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans that apply to the LBNL site.

h) With the implementation of the project-specific mitigation measures noted above, and with the mitigation measures identified in the LRDP EIR, as amended, the Proposed Project would not exceed the Standards of Significance identified in the LRDP EIR, as amended.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by the LRDP EIR, as amended: Mitigation Measures 4.a through 4.d are added to fully mitigate potential impacts to the Alameda whipsnake.

Molecular Foundry Project-Specific Mitigation Measures: See Mitigation Measures 4.a through 4.d, above.

Sources:

California Department of Fish and Game, *California Natural Diversity Database, version 2.1.2,* data request for the Oakland East, Oakland West, Briones Valley, and Richmond 7.5 minute USGS topographic quadrangles, 2002.

California Native Plant Society, *Electronic Inventory of Rare and Endangered Plants of California, version 1.5.1*, data request for the Oakland East, Oakland West, Briones Valley, and Richmond 7.5 minute USGS topographic quadrangles.

Lawrence Berkeley National Laboratory, *Draft and Final Environmental Impact Report for the 1987 Site Development Plan*, (SCH# [19]85112610), August 1987.

Lawrence Berkeley National Laboratory, *Draft and Final Supplemental Environmental Impact Report (SEIR) for the Proposed Renewal of the Contract Between the United States Department of Energy and the Regents of the UC for the Operation and Management of the Lawrence Berkeley Laboratory*, SCH# [19]91093068, prepared by the University of California and Lawrence Berkeley Laboratory, with the assistance of Ira Fink and Associates, Inc., September 1992.

Lawrence Berkeley National Laboratory, *Supplemental Environmental Impact Report Addendum for the Proposed Renewal of the Contract Between the United States Department of Energy and the Regents of the UC for the Operation and Management of the Lawrence Berkeley Laboratory*, SCH# [19]91093068, September 1997.

Lawrence Berkeley National Laboratory, NEPA/CEQA Program, *Project Description for the Proposed Sitewide Water Distribution Upgrade, Phase 1* (submitted in support of request for a Categorical Exemption), October 2001.

McGinniss, S.M., *An evaluation of potential habitat sites for the Alameda whipsnake (Masticophis lateralis euryxanthus) within and immediately adjacent to the border of the Lawrence Berkeley National Laboratory, Berkeley, California*, prepared for: Elton Beck Associates, Point Richmond, CA, May 18, 1996.

Philliber, Jeff, Planner, NEPA/CEQA Program, Lawrence Berkeley National Laboratory, email re: Alameda Whipsnake, Aug. 30, 2002.

U.S. Fish and Wildlife Service, *Endangered and threatened wildlife and plants; final determination of critical habitat for the Alameda whipsnake (Masticophis lateralis euryxanthus)*, Federal Register Volume 65, Number 192, October 3, 2000.

5. CULTURAL RESOURCES

LRDP EIR, as amended:

The impact of LBNL projects on cultural resources would be considered significant if they would exceed the following Standards of Significance, established by the LRDP EIR, as amended:

- Disrupt or adversely affect a prehistoric or archaeological site, or a property of historic or cultural significance to a community or ethnic or social group, or a paleontological site, except as part of a scientific study; or
- Affect a local landmark of local cultural/historic importance.

The following relevant impacts to cultural resources have been anticipated and analyzed pursuant to CEQA, as part of the programmatic LRDP EIR, as amended, from which this analysis is tiered:

Impact III-E-1:	Continued University operation of LBNL, including continued implementation of the 1987 LRDP, while resulting in removal of substandard buildings, is not expected to adversely impact any significant prehistoric, archaeological, or paleontological site, or any property of historic or cultural significance, other than the Laboratory itself.
Cumulative Impacts:	No significant cumulative impacts to archaeological or historical resources at and in the vicinity of LBNL are anticipated.

The LRDP EIR, as amended, does not contain cultural resources mitigation measures that would be applicable to the Proposed Project. All potential impacts were found to be less than significant impact.

Discussion:

a) As part of the environmental analysis for the 1987 LRDP EIR (SEIR), all undeveloped land and proposed building locations (including the proposed Molecular Foundry site) were examined for potential historical and archaeological resources. According to the SEIR, all reasonably accessible parts of the LBNL area were examined. Special attention was given to areas of relatively flat land or rock outcrops. The steep hillsides were not examined intensively, although transects through accessible areas were made. Based on the findings of the historic and archaeological resources survey, no indications of historic or prehistoric archaeological resources were encountered in any location within the project site.

b) As indicated in the 1987 SEIR (described in item "a" above), there are no known archaeological resources in the vicinity of the project site. Therefore, it is unlikely that development of the Proposed Project would cause an adverse change to any unique archaeological resource.

c) According to the 1987 SEIR (described in item "a" above), there are no known paleontological resources in the vicinity of the project site. However, it is possible that archaeological and/or paleontological artifacts could be unexpectedly discovered during construction.

Molecular Foundry Mitigation Measure 5: If an archaeological and paleontological artifact were discovered on-site during construction, all activities within a 50-foot radius would be halted and a qualified archaeological/paleontological monitor would be summoned within 24 hours to inspect the site. If the find were determined to be significant and to merit formal recording or data collection, time and funding would be required to salvage the material. Any archaeologically important data recovered during monitoring would be cleaned, catalogued, and analyzed, with the results presented in a report of finding that satisfies professional standards.

Implementation of the above project-specific mitigation measure would further reduce a less-than-significant impact.

d) Since the project is unlikely to contain any archaeological and paleontological resources, it would also be unlikely to encounter human remains in the vicinity of the project site. If human remains should be encountered during construction, work would be halted and procedures described in item "c" above would be implemented.

e) The Proposed Project would not exceed the Standards of Significance established by the LRDP EIR, as amended.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, mitigation measures: None.

Molecular Foundry Project-Specific Mitigation Measures: None required. Molecular Foundry Mitigation Measure 5 is provided to further reduce less-than-significant impact to archaeological resources.

Sources:

Lawrence Berkeley Laboratory, *Draft and Final Supplemental Environmental Impact Report (SEIR) for the Proposed Renewal of the Contract Between the United States Department of Energy and the Regents of the UC for the Operation and Management of the Lawrence Berkeley Laboratory*, prepared by the University of

California and Lawrence Berkeley Laboratory, with the assistance of Ira Fink and Associates, Inc., September 1992.

6. GEOLOGY AND SOILS

LRDP EIR, as amended:

The potential exposure of LBNL projects to unstable geologic and soil conditions would be considered significant if, as established by the LRDP EIR, as amended, it would result in development in the following areas, identified by the LRDP EIR, as amended:

- Which are located within an Alquist-Priolo Special Studies Zone, or within a known active fault zone, or an area characterized by surface rupture that might be related to a fault;
- Where the substrate consists of material that is subject to liquefaction or other secondary seismic hazards in the event of groundshaking;
- Where there is evidence of seismic hazards, such as landsliding or excessively steep slopes, that could result in slope failure;
- Which are in the vicinity of soil that is likely to collapse, as might be the case with karst topography, old mining properties, or areas of subsidence caused by groundwater drawdown;
- Where soils are characterized by shrink/swell potential that might result in deformation of foundations or damage to structures; and
- Which are located next to a water body that might be subject to tsunamis or seiche waves.

The following relevant impacts, resulting from exposure to unstable geologic or soil conditions, have been anticipated and analyzed pursuant to CEQA, as part of the programmatic LRDP EIR, as amended, from which this analysis is tiered:

Impact III-B-1:	There could be significant impacts on people or property due to continued operation and the development of LBNL facilities in areas susceptible to surface rupture. There may be potential adverse impacts to people and property at the site caused by groundshaking, landsliding, lurching, and differential compaction during a seismic event.
Impact III-B-2:	Soil erosion, sedimentation and landsliding caused by construction work may adversely affect the stability of LBNL buildings placed on the site.
Cumulative Impacts:	No significant adverse cumulative impacts upon people or property are anticipated in or in the vicinity of LBNL as a result of geologic and/or soils hazards.

As a result of anticipated exposure to geologic and/or unstable soil conditions, the following mitigation measures, adopted as part of the LRDP EIR, as amended, are already required for the Proposed Project, and are therefore part of the Proposed Project's description:

Mitigation Measure III-B-1:	Geologic and soils studies will be undertaken during the design phase of each LBNL building project. Recommendations contained in those studies would be followed to ensure that the effects of landsliding, lurching, and liquefaction potential will not represent a significant adverse impact during a seismic event.
Mitigation Measure III-B-2a:	Excavation and earth moving will be designed for stability, and accomplished during the dry season when feasible. Drainage will be arranged to minimize silting, erosion, and landsliding. Upon completion, all land will be restored, covering exposed earth with planting.
Mitigation Measure III-B-2b:	Foundations for proposed structures will be designed in accordance with geologic and soils engineering recommendations to minimize the long-term possibilities of landslide.
Mitigation Measure III-B-2c:	Excavations will be shored as required by law to preclude minor short-term landslides during construction.
Mitigation Measure III-B-2d:	Revegetation of disturbed areas, including slope stabilization sites, using native shrubs, trees, and grasses will be included as part of all new projects.

Discussion:

a(i), a(ii): The Proposed Project is located in the San Francisco Bay Area, which, due to the presence of the San Andreas Fault System, is a region of significant seismic activity. Recent studies sponsored by the United States Geological Survey (USGS) estimate that there is a 70 percent likelihood of a Richter magnitude 6.7 or higher earthquake occurring in the Bay Area in the next 30 years. The project site could experience a range of ground- shaking effects during an earthquake on one of the active earthquake faults in the San Francisco Bay Area. Excessive groundshaking could also cause secondary ground failures such as seismically-induced landslides, surface rupture, and differential settlement that could expose people to the risk of injury and cause structural damage to buildings. The Hayward fault, one of the major active faults in the San Andreas System, extends along the eastern side of the San Francisco Bay and is located 0.3 miles from the project site. Ground-shaking intensities from a major seismic event on the Hayward fault could generate ground motion approaching or exceeding a Peak Ground Acceleration of 0.7g. Ground motion of this type would be characterized by the Modified Mercalli Intensity Scale as violent to very violent (ABAG, 2002).[11] Geotechnical investigations

[11] While the magnitude is a measure of the energy released in an earthquake, intensity is a measure of the ground-shaking effects at a particular location. Shaking intensity can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The Modified Mercalli (MM) intensity scale is commonly used to measure earthquake effects due to groundshaking. The MM values for intensity range from I (earthquake not felt) to XII (damage nearly total). MM intensities ranging from IV to X could cause moderate to significant structural damage. ***Acceleration*** is scaled against a value that everyone is familiar with, that is, acceleration due to gravity or the acceleration with which a ball falls if released at rest in a vacuum (1.0g). Acceleration of 1.0g is

conducted at the project site have estimated peak bedrock accelerations of 0.70g from an earthquake occurring on the Hayward fault,[12] and 0.40g from an earthquake occurring on the San Andreas Fault, located approximately 19 miles southwest of the project site. As a comparison, ground motion during the 1989 Loma Prieta earthquake at the Santa Cruz Mountain epicenter reached 0.64g. Due to its close proximity to the project site, the Hayward fault is likely to generate the most significant levels of groundshaking. Earthquakes and groundshaking in the Bay Area are unavoidable and expected to occur at some time during the life of the project. Although some structural damage is typically not avoidable, building codes and local construction requirements have been established to protect against building collapse and major injury during a seismic event. The Proposed Project would comply with requirements of the 1998 California Building Code, LBNL's Facilities Department Project & Design Management Procedures Manual "Lateral Force Design Criteria," and federal standards. In addition, the seismic design of the project would comply with the latest UC seismic safety policies. The design would exceed the requirements of the California Building Code (CCR Title 24) and comply with the more stringent local building code (LBNL Standard RD 3.22). As part of the project, a Conceptual Design Report has been prepared that accounts for all loads to which the structure may be subjected, including dead, live, wind, and seismic, and that incorporates recommendations provided in the preliminary geotechnical report prepared for the project site to reduce ground-shaking hazards, as required by Mitigation Measure III-B-2a, listed above.

An engineering analysis report and drawings, and relevant grading or construction activities on the project site, would be required by Mitigation Measure III-B-2a to address constraints and incorporate recommendations identified in the geotechnical investigations. Considering that the Proposed Project would be constructed in conformance with the California Building Code, LBNL requirements, and federal regulations and guidelines, the risks of injury and structural damage from groundshaking would be reduced and the impacts would be less than significant.

The project site is not within the most recently delineated Alquist-Priolo Earthquake Fault zone.

a(iii), a(iv): The project site is not located in an area identified by the California Geological Survey (CGS) as being susceptible to liquefaction hazards, and the geotechnical report prepared for the project site did not identify liquefiable soils. Potential liquefaction hazards are therefore considered less than significant.

The project site is located in a CGS-designated Seismic Hazard Zone for earthquake-induced landslides. The Seismic Hazards Mapping Act (SHMA) was enacted in 1990 to protect the public from the effects of strong groundshaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires the State Geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Before project approval is granted for a site within a seismic hazard zone, a geotechnical investigation must be conducted and appropriate mitigation measures incorporated into the project design. The CGS Special Publication 117, adopted in 1997 by the State Mining and Geology Board in accordance with the SHMA, constitutes guidelines for evaluating seismic hazards other than surface faulting, and for recommending mitigation measures as required by Public Resources Code Section 2695(a). Compliance with the requirements of SHMA would reduce

equivalent to a car traveling 100 meters (328 feet) from rest in 4.5 seconds. Acceleration is expressed by a "g" which is gravity = 980 centimeters per second squared.

12 In the near-fault region of the Hayward fault (i.e., less than 2 km from the fault, which includes the project site), an additional seismic "fling" can be expected. This is accounted for in the latest version of the California Building Code.

the risk of injury and property damage resulting from potential earthquake-induced landslide hazards to a less than significant level. The Proposed Project includes these project design features as required by Mitigation Measures III-B-1, III-B-2a, and III-B-2b in the LRDP EIR, as amended.

b) The Proposed Project would require excavation of approximately 32,000 cubic yards of soil to construct the Molecular Foundry building, the Central Utility Plant building, and otherwise to prepare the site for roads and walkways. This fill material would not leave the site but would be used as engineered fill to construct the new Lee Road extension, along the western perimeter of the Molecular Foundry buildings, and the widening of Lee Road, southwest of Building 62.

During excavation, topsoil would first be stripped and stockpiled for dressing finished slopes and for use in landscaped areas in all areas where excavations are to be made or fill deposited. Cut and fill slopes would not be steeper than two horizontal to one vertical, and edges of cut banks would be rounded to blend into the natural terrain. A site and project-specific erosion control plan would be included as part of the project design process and implemented as a condition for approval. This plan would include, as part of the Proposed Project, many or all of the following features: 1992 SEIR Mitigation Measures III-B-2a, III-B-2d, III-C-2; and development of a project/site-specific SWPPP. The SWPPP would include, as feasible, the covering of excavated materials, installation of silt traps, fencing, and use of filter fabric as measures to control erosion and sedimentation as required by the California general permit for stormwater associated with construction activities. Landscaping would be begun as soon as surface disturbances were finished for each relevant area. Potential soil erosion and topsoil impacts would be less than significant.

c, d) Impacts from potential sandsliding (section VI-iv) and liquefaction ground failures including lateral spreading (Section VI-I through iii), soil subsidence, and soil collapse have been determined to be less than significant. The project design would incorporate foundation recommendations of the project geotechnical evaluation, in accordance with LRDP EIR, as amended, Mitigation Measure III-B-2b, so as to be constructed to applicable California Building Code and LBNL standards. In addition, the project would adhere to, where appropriate, guidelines of the CGS Special Publications 117; and incorporate LRDP EIR, as amended, Mitigation Measure III-B-1 to address any potential liquefaction hazards.

Geotechnical borings installed at the project site identified portions of on-site soils as being highly expansive, and provided recommendations to address these hazards. The report describes the site as being underlain by a combination of compacted material used on the site for landslide repair, landslide debris, and colluvial soil (Kleinfelder, January 29, 2002). The report specifically states: “Because some of the on-site soil has a high expansion potential, the geotechnical engineer should approve soil prior to its use as fill material. Fill should be moisture-conditioned and compacted to at least 90 percent relative compaction using ASTM D-1557 test procedure.” The report also recommends that the soil at sub-grade level be evaluated during site excavation to determine its expansion characteristics, and if found to be expansive, this soil should be excavated and replaced with low-expansion materials. These geotechnical recommendations have been incorporated into the Proposed Project Conceptual Design Report, along with LRDP EIR, as amended, Mitigation Measures III-B-1 and III-B-2(a and b). Any potential impacts due to expansive soils would be less than significant with the inclusion of these project features.

e) The Proposed Project would not include the installation of septic tanks or an alternative wastewater disposal system. Wastewater flows generated by the Proposed Project would be routed into the existing LBNL sewer system.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, mitigation measures: None. The Proposed Project would incorporate LRDP EIR, as amended, Mitigation Measures III-B-1, III-B-2a, III-B-2b, III-B-2c, and III-B-2d.

Molecular Foundry Project-Specific Mitigation Measures: None required.

Sources:

Association of Bay Area Governments (ABAG), *Earthquake Hazards Maps for Berkeley,* 2002.

California Building Standards Commission, *California Building Code*, Title 24, Part 2, 1995.

California Department of Conservation, Geological Survey (formerly the Division of Mines and Geology), Special Publication 78: *Earthquake Planning Scenario for a Magnitude 7.5 Earthquake on the Hayward Fault*, 1987.

California Department of Conservation, Geological Survey (formerly the Division of Mines and Geology), *Seismic Shaking Hazard Maps of California*, 1999.

International Conference of Building Officials, *Uniform Building Code*, Whittier, California, 1997.

Lawrence Berkeley National Laboratory, *Draft and Final Environmental Impact Report for the 1987 Site Development Plan*, (SCH# [19]85112610), August 1987.

Lawrence Berkeley National Laboratory, *Draft and Final Supplemental Environmental Impact Report (SEIR) for the Proposed Renewal of the Contract Between the United States Department of Energy and the Regents of the UC for the Operation and Management of the Lawrence Berkeley Laboratory*, SCH# [19]91093068, prepared by the University of California and Lawrence Berkeley Laboratory, with the assistance of Ira Fink and Associates, Inc., September 1992.

Lawrence Berkeley National Laboratory, *Supplemental Environmental Impact Report Addendum for the Proposed Renewal of the Contract Between the United States Department of Energy and the Regents of the UC for the Operation and Management of the Lawrence Berkeley Laboratory*, SCH# [19]91093068, September 1997.

Kleinfelder, Geotechnical Investigation, *Proposed Molecular Foundry Building, Lawrence Berkeley National Laboratory*, January 29, 2002.

Peterson, M.D., Bryant, W.A., Cramer, C.H., *Probabilistic Seismic Hazard Assessment for the State of California, California Geological Survey Open-File Report issued jointly with U.S. Geological Survey, CDMG 96-08 and USGS 96-706*, 1996.

Smith Group, *Concept Design Report: Molecular Foundry Facility, Lawrence Berkeley National Laboratory*, April 15, 2002.

U.S. Geological Society (USGS) Working Group on California Earthquake Probabilities (WG99), *Earthquake Probabilities in the San Francisco Bay Region: 2000-2030 – A Summary of Findings*, Open-File Report 99-517, 1999.

7. HAZARDS AND HAZARDOUS MATERIALS

LRDP EIR, as amended:

The potential exposure of LBNL projects to hazards and hazardous materials would be considered significant if it would exceed the following Standards of Significance, identified by the LRDP EIR, as amended:

- Create a potential public health hazard or involve the use, production, or disposal of materials that pose a hazard to people or to animal or plant populations;
- Interfere with emergency response plans or emergency evacuation plans;
- Result in unsafe conditions for employees or surrounding neighborhoods;
- Expose building occupants to work situations that exceed health standards or present an undue potential risk of health-related accidents; or
- Conflict with any federal, state, or local regulations or contractual DOE Order for the handling, packaging, storage, transport, or disposal of hazardous and radioactive materials and/or wastes.

The following relevant and potentially significant impacts, resulting from exposure to hazards and hazardous materials, have been anticipated and analyzed pursuant to CEQA, as part of the programmatic LRDP EIR, as amended, from which this analysis is tiered:

Impact IV-K-1:	Continued UC operation of LBNL, including proposed increases in laboratory and facility space, may result in impacts from the increased use of hazardous materials in research, facility construction, and facility maintenance activities.
Impact IV-K-2:	Continued UC operation of LBNL, including proposed increases in laboratory and facility space, is expected to result in the increased generation and discharge of hazardous wastes, including offsite disposal of hazardous, radioactive, and medical wastes, from research, facility construction, and facility maintenance activities.
Impact IV-K-3:	Continued UC operation of LBNL, including proposed increases in laboratory and facility space, will result in the increased transportation of hazardous materials and wastes.

Impact IV-K-5:	Continued UC operation of LBNL, including proposed increases in laboratory and facility space, will result in increased numbers of employees and thus increase the potential for exposures to hazardous or radioactive materials.
Impact IV-K-6:	Continued UC operation of LBNL, including proposed increases in laboratory and facility space, will result in a need to continue emergency preparedness and response programs to minimize impacts which may result from actual or potential release of hazardous materials in the workplace or the environment.
Cumulative Impacts:	No significant cumulative impacts are expected.

As a result of limited exposure to hazards and hazardous materials, the following mitigation measures, adopted as part of the LRDP EIR, as amended, are already required for the Proposed Project, and are therefore incorporated as part of the Proposed Project's description:

Mitigation Measure IV-K-1:	LBNL will prepare an annual self-assessment summary report. The report will summarize environment, health, and safety program activities, and identify any areas where LBNL is not in compliance with laws and regulations governing hazardous materials, hazardous waste, hazardous materials transportation, regulated building components, worker safety, emergency response, and remediation activities.
Mitigation Measure IV-K-2a:	Prior to shipping any hazardous materials to any hazardous waste treatment, storage or disposal facility, LBNL will confirm that the facility is licensed to receive the type of waste LBNL is proposing to ship to that facility.
Mitigation Measure IV-K-2b:	LBNL will continue its waste minimization programs and strive to identify new and innovative methods to minimize hazardous waste generated by LNBL activities.
Mitigation Measure IV-K-3:	LBNL will require hazardous waste haulers to provide evidence that they are appropriately licensed to transport the type of wastes being shipped from LBNL.
Mitigation Measure IV-K-5:	In addition to implementation of the numerous employee communication and training requirements included in regulatory programs, LBNL will undertake the following additional measures as ongoing reminders to workers of health and safety requirements: Posting, in areas where hazardous materials are handled, of phone numbers of LBNL offices, which can assist in proper handling procedures and emergency response information.

Continuing to post "Emergency Response and Evacuation Plans" in all LBNL buildings.

Continuing to post all sinks in areas where hazardous materials are handled with signs reminding users that hazardous wastes cannot be poured down the drain.

Continuing to post dumpsters and central trash collection areas where hazardous materials are handled with signs reminding users that hazardous wastes cannot be disposed of as trash.

Mitigation Measure IV-K-6: LBNL will update its emergency preparedness and response program on an annual basis, and will provide copies of this program to local emergency response agencies and to members of the public upon request.

Setting:

The proposed project site is largely undeveloped with the exception of an approximately 18-car parking lot. There is no history of hazardous materials processing, storage, or disposal on the project site. This is consistent with the findings of LBNL's 10-year site-wide investigation of environmental activities at LBNL. Soil sampling and analysis of the proposed project site was carried out in January 2002. This investigation involved testing for volatile organic compounds, heavy metals, and radiological contaminants. The results of these analyses indicate that the proposed Molecular Foundry project site is free of chemicals of potential concern.

Discussion:

a,b) The Proposed Project is anticipated to be classified by the Department of Energy as a non-nuclear low-hazard facility. The Molecular Foundry facility operations would not include bulk storage of flammable or combustible liquids or gases, corrosive, caustic, or otherwise reactive or toxic chemical substances. The Proposed Project would comply with all LBNL hazardous materials policies and programs, in addition to all applicable Department of Energy Program and Project Management Practices. In addition, environmental investigations at the proposed project site have not revealed the presence of contaminated soil or groundwater (Javandel, 2002).

LBNL has developed a stringent hazardous materials program, which includes personnel training and careful management, handling, and storage policies for hazardous materials. Compliance with existing LBNL policies would reduce potential hazardous materials impacts to a less than significant level. Chemicals used at the site would be used in very small amounts, and would therefore not create a hazard to the public. Chemical wastes would be contained and ultimately disposed in accordance with all applicable and appropriate storage, transport, and disposal requirements. Satellite accumulation areas would be used to properly store hazardous waste until transferred to the RCRA-permitted Hazardous Waste Handling Facility. As provided in LRDP EIR, as amended, Mitigation Measure IV-K-1, the Proposed Project would track its safety and compliance performance in regard to hazardous materials; as provided in Mitigation Measure IV-K-2a, LBNL will confirm the appropriate licensing of any receiving facility for hazardous waste treatment, storage, or disposal; as provided in Mitigation Measure IV-K-2b, LBNL will continue its waste minimization programs to reduce the hazardous waste stream;

and as provided in Mitigation Measure IV-K-3, LBNL will confirm the appropriate licensing of any hazardous waste hauler serving the Proposed Project. Incorporation of these existing LRDP EIR mitigation measures into the project would further reduce a less than significant impact.

c) The project site is adjacent to the University of California at Berkeley campus, and the UC Lawrence Hall of Science is approximately 1,800 feet north of the project site. However, no existing or proposed kindergarten-through-12th grade schools are located within one-quarter mile of the Proposed Project. Potential impacts are anticipated to be less than significant.

d) Although portions of LBNL are classified as hazardous waste sites by Government Code Section 65962.5, the location of the Proposed Project site is not included on this list, and according to environmental sampling conducted at the project site, soil and groundwater beneath the proposed project site have not been impacted by activities in surrounding facilities. Therefore the project would not result in exposure to contaminated soil or groundwater.

e,f) The Proposed Project is not located within two miles of a public or private airstrip. Therefore, there are no potential impacts associated with safety hazards related to air traffic.

g) The Proposed Project is not anticipated to impair implementation or physically interfere with the emergency response or evacuation plan at LBNL.

h) LBNL maintains its own on-site fire department and emergency medical services, along with hazardous response personnel, which would minimize any risk associated with fires and hazardous material spills. These on-site services are located 1,400 feet from the proposed project site and are sufficiently staffed to accommodate this project. As part of the Proposed Project, fire-resistant ground cover would be planted as needed for erosion control. Plant materials would be selected based on their indigenous, water-saving, and low-maintenance characteristics. In addition, the Molecular Foundry facilities would be designed in conformance with requirements for Group "B" and "H-8" research laboratory occupancies as defined by the California Building Code (CBC), Type II Fire Resistive Construction, and with fire code safety requirements.

i) The Proposed Project would not exceed an applicable Standard of Significance established by the LRDP EIR, as amended.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, mitigation measures: None.

Molecular Foundry Project-Specific Mitigation Measures: None required.

Sources:

Javandel, Iraj, Lawrence Berkeley National Laboratory Earth Sciences Division, *Environmental Sampling at the Proposed Molecular Foundry Site Memorandum*, February 1, 2002.

State of California, Hazardous Waste and Substances Site List, 1998.

8. HYDROLOGY AND WATER QUALITY

LRDP EIR, as amended:

The impact of LBNL projects on hydrology and water quality would be considered significant, as established by the LRDP EIR, as amended, if projects are proposed that:

- Would be located in flood-prone areas;
- Would increase off-site flood hazard, erosion, or sedimentation;
- Would substantially degrade or deplete groundwater resources;
- Would interfere substantially with groundwater recharge; and
- Would substantially degrade surface or groundwater quality.

The following relevant impacts to hydrology and water quality have been anticipated and analyzed pursuant to CEQA, as part of the programmatic LRDP EIR, as amended, from which this analysis is tiered:

Impact III-C-1:	LBNL is not located in a flood-plain area. Continued University operation of LBNL, including continued implementation of the 1987 LRDP, is not expected to increase off-site flood hazard, erosion, or sedimentation. The project is not expected to deplete groundwater resources, interfere with groundwater recharge, or degrade surface or groundwater quality substantially.
Impact III-C-2:	Continued University operation of LBNL, including continued implementation of the 1987 LRDP, could produce increased surface and storm runoff.
Cumulative Impacts:	Implementation of all hydrology mitigation measures relevant to cumulative development, and compliance with all applicable laws, will result in less than significant impacts on hydrology. However, cumulative development in the City of Berkeley may adversely impact water quality, as well as potentially result in erosion and sedimentation of drainage facilities.

As a result of anticipated hydrological and water quality impacts, the following mitigation measures, adopted as part of the LRDP EIR, as amended, are already required for the Proposed Project, and are therefore incorporated as part of the Proposed Project's description:

Mitigation Measure III-B-2a:	Excavation and earth moving will be designed for stability, and accomplished during the dry season when feasible. Drainage will be arranged to minimize silting, erosion, and landsliding. Upon completion, the land will be restored, covering exposed earth with planting.

Mitigation Measure III-B-2d:	Revegetation of disturbed areas, including slope stabilization sites, using native shrubs, trees, and grasses, will be included as part of all new projects.
Mitigation Measure III-C-2:	Each individual project will continue to be designed and constructed with adequate storm drainage facilities to collect surface water from roofs, sidewalks, parking lots, and other surfaces and deliver it into existing channels which have adequate capacity to handle the flow.
Cumulative Impacts:	Potential adverse impacts to water quality can be reduced if LBNL adopts feasible mitigation measures to control surface water runoff, prevent erosion, and maintain adequate drainage facilities.

Discussion:

a) LBNL is situated in the ridges and drainage areas of Blackberry and Strawberry Canyons in the East Bay Hills within the Strawberry Creek watershed. Runoff from the project site currently drains to "No Name" Creek , which is a tributary of Strawberry Creek. The Proposed Project consists of two laboratory buildings, an access road, and associated parking, resulting in additional impervious surface area and consequently increasing surface water runoff from the project site. As part of the Proposed Project, surface water runoff would be re-routed into the LBNL storm drain system and conveyed to an existing detention basin near Centennial Drive in Strawberry Creek that subsequently discharges water further downstream in Strawberry Creek. Storm water generated within the LBNL facility is currently managed in conformance with LBNL's National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Industrial Activity, as required by the Clean Water Act and the State Water Resources Control Board. Oversight and enforcement of this permit is provided by the San Francisco Bay Regional Water Quality Control Board and the City of Berkeley. Implementation of the permit requirements is detailed in LBNL's Storm Water Pollution Prevention Plan (SWPPP) and Storm Water Monitoring Plan (SWMP). Since the Proposed Project would be required to comply with LNBL's existing SWPPP and NPDES permit requirements, potential impacts associated with violation of water quality standards from future project site storm water run off is anticipated to be less than significant.

Construction-related grading and other activities would be required to comply with the Association of Bay Area Governments' Manual of Standards for Erosion and Sediment Control Measures, and with the State of California's Best Management Practices for Construction Activity Handbook. The site will require an NPDES stormwater permit for construction activity, which includes a project-specific SWPPP. A project-specific erosion control plan would be included and implemented during construction to reduce short-term water quality impacts associated with construction. BMPs addressed in this plan would include covering of excavated materials, installation of silt traps, fencing, use of filter fabric, stabilized construction entrances, etc., and oversight throughout construction by LBNL engineers and EH&S specialists. In addition, the plan would require disturbed areas to be landscaped and re-seeded at the earliest practical time during construction so that ground cover would be well established by the next rainy season, as required by Mitigation Measures III-B-2a and III-B-2d. Landscaping would begin as soon as surface disturbances are completed for each relevant area. Compliance with the SWPPP would ensure that potential impacts associated with project construction would be less than significant.

b) The Proposed Project is located in the Berkeley Hills, generally characterized by steep slopes underlain by bedrock with a shallow soil surface. Groundwater flow through bedrock is typically characterized by fracture flow that has slow recharge and low yield, while groundwater flow in the drainages is unconfined flow and fluctuates with seasonal precipitation. This area is not underlain by an easily accessible, high-yield, confined aquifer system that is capable of supplying many users. However, this area may represent a portion of the recharge area for the alluvial aquifer underlying the East Bay Plain to the west. The project would not use water supplied from groundwater sources at the site, but from the East Bay Municipal Utility District supply system. Therefore, the project would not need to pump groundwater and would not contribute to the depletion of an established groundwater resource.

It is anticipated that some dewatering may be necessary during project excavation and construction. Excavation for the site may intersect bedrock containing fracture flow, thereby causing surface seeps within the excavation. This is expected to be a temporary condition during construction that would be managed by temporary dewatering systems. If a groundwater seepage condition were to occur, and management of this condition were to become necessary, the project could require a subdrain system or other engineered solution to reduce groundwater levels around the building. This however, would not constitute significant alteration or depletion of a valuable or beneficial groundwater resource.

If dewatering is necessary during excavation and construction, the groundwater seepage would not be expected to contain any chemicals of special concern given the results of sampling conducted in January 2002. Such water, were it encountered, could therefore be discharged to storm drains.

c-f) The Proposed Project would not result in flooding, erosion, or siltation on or off-site. As discussed above, storm water drainage from the project site would be managed through LBNL's existing drainage management facilities. Neither the course of No Name Creek nor Chicken Creek would be affected or altered, although the existing drainage rates and volumes may be reduced by the project as natural drainage from the site area is reduced. This reduction is considered less than significant to the overall hydrologic conditions of the creek. Surface water drainage from the project site would be managed through the existing storm drain system, which discharges to a detention basin formed by a dam in Strawberry Creek. The increased volume of storm water handled by the drainage system as a result of the Proposed Project would not exceed system capacity or result in flooding. In addition, management of the system would conform with LBNL's existing SWPPP and NPDES permit, and potential adverse impacts to storm water run off quality originating from the LBNL facility are therefore anticipated to be less than significant.

As discussed above, potential on-site erosion associated with construction operations would be minimized to a less than significant level by a site and project-specific erosion control plan that would be included as a required part of the NPDES construction activity permit.

g-j) The project site does not lie within the 100-year flood plain as determined by the Federal Emergency Management Agency (FEMA) flood hazard mapping, and would not include the construction of housing. There are no impounded water bodies upstream from the project site, and therefore flooding associated with failure of a dam or inundation by seiche are not anticipated to affect the project. As the proposed project site is located approximately 700 feet above mean sea level, potential inundation by tsunami is extremely remote.

k) The Proposed Project would not exceed the Standards of Significance established by the LRDP EIR, as amended.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, mitigation measures: None. The Proposed Project would incorporate LRDP EIR, as amended, Mitigation Measures III-B-2a, III-B-2d, and III-C-2. As a result, no significant hydrological impacts or impacts to water quality would result from the Proposed Project.

Molecular Foundry Project-Specific Mitigation Measures: None required.

Sources:

Association of Bay Area Governments (ABAG), *Manual of Standards for Erosion and Sediment Control Measures,* 1995.

Blair, Steve, Civil Engineer, Lawrence Berkeley National Laboratory, personal communication, April 23, 2002.

California Storm Water Quality Task Force, *Storm Water Best Management Practice Handbook , Construction Activity,* 1993.

FEMA Hazard Mapping by ESRI Website: http://www.esri.com/hazards, accessed April 2002.

Lawrence Berkeley National Laboratory, *Storm Water Pollution Prevention Plan*, June 1, 2002.

USGS 7.5 minute Series Quadrangle, Oakland East, photo revised 1980.

---

9. LAND USE AND PLANNING

LRDP EIR, as amended:

The impact of LBNL projects on land use and planning policies would be considered significant if, as established by the LRDP EIR, as amended, UC's continued operation of development of LBNL would:

- Propose land uses that would conflict with existing or proposed land uses at the periphery of the campus or with local land use plans;
- Result in the conversion of open space into urban- or suburban-scale uses;
- Conflict with local general plans, zoning, or locally adopted environmental plans and goals; and
- Result in nuisance impacts as a result of incompatible land uses.

The following relevant impacts to land use and planning policies have been anticipated and analyzed pursuant to CEQA, as part of the programmatic LRDP EIR, as amended, from which this analysis is tiered:

Impact III-G-1:	There are no LBNL-proposed developments in the site development plan which would impact directly on the privately owned multiple-family or single-family housing along the LBNL western and northern boundaries.
Impact III-G-2:	Continued operation of LBNL by the University, including continued implementation of the 1987 LRDP, would result in the conversion of a small amount of open space into urban- or suburban-scale uses.
Impact III-G-3:	Continued operation of LBNL by the University, including continued implementation of the 1987 LRDP, would be consistent with the 1990 UC Berkeley Long Range Development Plan, and the General Plans of the City of Berkeley and the City of Oakland.
Cumulative Impacts:	No adverse cumulative impacts on land uses at and in the vicinity of LBNL are expected as a result of cumulative development.

As a result of anticipated impacts to land use and planning policies, the following mitigation measure, adopted as part of the LRDP EIR, as amended, is already required for the Proposed Project, and is therefore incorporated as part of the Proposed Project's description:

Mitigation Measure III-G-2:	Buildings proposed for development at LBNL will follow the design guidelines contained in the LBNL LRDP, as amended.

Discussion:

a) The project would occupy an approximately two and one-half acre site that is mostly undeveloped and located on a southwest-facing hillside between Building 72 and Building 66. It would complete a cluster of buildings near the junction of Lee Road and Lawrence Road just west of the Strawberry Entrance, within LBNL's Materials and Chemistry Research Area. Activities at the project site would be linked to activities in both Buildings 72 and 66. The Proposed Project would therefore not divide an established community.

b) The project site is part of 200 acres owned by the University of California, most of which are leased to the Department of Energy (DOE). This land and a larger surrounding area belonging to the University is within the boundaries of the Cities of Berkeley and Oakland. The proposed project site is on the eastern portion of the LBNL site and is within the city limits of Oakland. Because the land is controlled by a state entity (UC) and operated by a federal agency (DOE), it is exempt from local zoning and planning regulations. However, it is the policy of the University and LBNL to cooperate with local agencies in planning matters to the extent feasible. The City of Oakland's General Plan designates the area for institutional use and resource conservation, and present and proposed uses are consistent with intended uses according to the Oakland General Plan.

   The LBNL LRDP, developed in 1987, organized the LBNL site into seven functional planning areas to consolidate related functions, maximize efficiency, and establish well-planned roadways, pedestrian paths, and parking to minimize hazards to employees and the public. The project site would be located in the Materials and Chemistry Research Area, also referred to as the East Site Materials Sciences Facilities. This plan reserved several site locations for future construction, anticipating a future need for "advanced and specialized research

facilities for specific programmatic needs." Therefore, construction of the Molecular Foundry on this site would be consistent with the intended implementation of the LBNL LRDP.

The Long Range Development Plan (LRDP) for LBNL was approved by The Regents of the University of California in 1987. While this Plan and its accompanying EIR anticipate development out to an unspecified year ("20XX"), the Addendum to the Supplemental site-wide EIR adopted in 1997 analyzes LRDP-related buildout impacts through the Contract extension year of 2007.

The LRDP anticipates that growth on the main LBNL site could increase from approximately 1.59 million gross square feet (gsf) in 1987 to approximately 2.0 million gsf at buildout. There are currently about 233,500 gsf available for development under this projection. The proposed Molecular Foundry building and accompanying Central Utility Plant building total approximately 94,500 gsf, which would leave approximately 140,000 gsf remaining to the proposed buildout anticipated in the 1987 LRDP, and analyzed in the LRDP EIR, as amended.

The LRDP projects that total population growth at LBNL could increase from approximately 2,850 in 1987 to approximately 4,750 at buildout.[13] LBNL is currently about 400 people below the population projection anticipated by the LRDP. The proposed Molecular Foundry would add approximately 140 staff, students, and visitors to LBNL, approximately 260 persons below the population level proposed in the 1987 LRDP, and analyzed in the LRDP EIR, as amended.

The Proposed Project is generally consistent with land use designations set forth under the LRDP. The project would be constructed in a partially developed "open space" where a new building is anticipated in the LRDP. According to the 1987 LRDP, open space is provided to, according to the 1987 LRDP, "enhance the working and research environment, to maintain landscape compatibility, and to take advantage of the mild Bay Area climate and the views. Open areas are to be set aside for employee picnics, outdoor gatherings, and exercise." The Proposed Project would create a large and high-quality outdoor space in the expansive outdoor terrace that would serve as an outdoor meeting and recreational space for occupants of all outdoor buildings in the vicinity. It would include a mixture of paved and planted areas and would be oriented to provide optimal views.

A portion of the proposed Molecular Foundry building would also be in a "buffer zone" area as identified under the LRDP. Buffer zones do not exclude new buildings, but encourage new buildings to be designed to address, enhance and/or uphold special constraints and amenities on such sites. These constraints and amenities pertain to views, hydrology, stability, special vegetation, and building density. Each of these concerns is addressed by the project and demonstrates consistency with the values listed in the LRDP. A consistency analysis and statement was conducted for this project and is incorporated into this analysis.

The Proposed Project affirms and is consistent with the LRDP Goals and Objectives. The site is adjacent to both utility corridors and traffic/transit corridors. All support services have adequate capacity to serve the new building at this location. The Proposed Project is generally consistent with the LRDP's Design Guidelines. The Proposed Project would be larger than what was initially anticipated for the particular functional planning area—the Materials and Chemical Research Area—of LBNL; however, these specific area distribution estimates were identified in the LRDP as being for "general estimating purposes only" and were not intended to restrict or

[13] Because the portion of the LBNL population identified as being located on the UC Berkeley Campus actually circulates regularly between Campus and LBNL main site facilities, aggregate rather than site-specific population figures are used for planning purposes to avoid population undercounting.

promote particular development levels. Regental approval was based on the aggregate space and population projections presented in the 1987 LRDP and the Proposed Project is entirely within those parameters.

Although not yet completed or approved, an update to the 1987 LRDP is in progress and does not conflict with the project. In November 2000, a Notice of Preparation was issued for this forthcoming LRDP and new LRDP EIR. This LRDP would project growth and development at LBNL for approximately the next twenty years; growth in population and in developed space is expected to occur at the same rates as have been occurring at LBNL during the past 15 years—approximately 1.3 percent per year. The draft LRDP and LRDP EIR are expected to circulate for public review in 2003. The proposed Molecular Foundry project would be reflected and accounted for in this new LRDP and LRDP EIR.

c) No Habitat Conservation Plans or Natural Community Conservation Plans are in effect at the project site or in its immediate vicinity (see Section 4, *Biological Resources*, above). The project would therefore not conflict with such plans.

d) The Proposed Project would not exceed a Standard of Significance established by the programmatic LRDP EIR, as amended.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, mitigation measures: None. The Proposed Project would incorporate LRDP EIR, as amended, Mitigation Measure III-G-2. As a result, no significant impact to land use or land use policies would result from the Proposed Project.

Molecular Foundry Project-Specific Mitigation Measures: None required.

Sources:

City of Oakland General Plan, *Land Use and Transportation Element,* March 1998.

Lawrence Berkeley Laboratory, *Long Range Development Plan,* PUB-5184, August 1987.

Lawrence Berkeley Laboratory, *Draft Long Range Development Plan,* 2002.

Lawrence Berkeley Laboratory, *Site Development Plan, DEIR,* December 1986.

Project Description and Plans.

Site Visit, March 13, 2002.

10. MINERAL RESOURCES

LRDP EIR, as amended:

The impact of LBNL projects on mineral resources would be considered significant if, as established by the LRDP EIR, as amended, UC's continued operation and development of LBNL would result in development in areas:

- Which are located in a Mineral Resource Zone identified by the California Department of Mines and Geology.

LBNL is not located in a Mineral Resource Zone identified by the California Department of Mines and Geology. Therefore the Proposed Project would have no impact on a Mineral Resource Zone and no mitigation measures are required.

Discussion:

a,b) The project site is between existing LBNL buildings. Land in its immediate vicinity is either already developed or has been carefully evaluated for possible future development. No mineral resources have been identified on the site. The Proposed Project would not require quarrying, mining, dredging, or extraction of locally important mineral resources, nor would it deplete any nonrenewable natural resource. The project site is not located in a Mineral Resource Zone identified by the California Department of Mines and Geology.

c) The Proposed Project would not exceed the Standard of Significance established by the programmatic LRDP EIR, as amended.

Sources:

City of Oakland General Plan, *Land Use and Transportation Element,* March, 1998

Lawrence Berkeley Laboratory, *Long Range Development Plan,* PUB-5184, August 1987.

Lawrence Berkeley Laboratory, *Site Development Plan DEIR,* December 1986.

---

11. NOISE

LRDP EIR, as amended:

The impacts of LBNL projects on noise levels would be considered significant if they would exceed the following Standards of Significance, established by the LRDP EIR, as amended:

- Generate noise that would conflict with local noise ordinances and standards, including State of California and local guidelines for long-term exposures, acceptable interior noise levels, and 24-hour average noise levels;

- Propose land uses that substantially increase noise levels in areas of sensitive receptors; and

- Propose land uses not compatible with the baseline noise levels.

The following relevant impacts to noise levels have been anticipated and analyzed pursuant to CEQA, as part of the programmatic LRDP EIR, as amended, from which this analysis is tiered:

Impact III-K-1:	Ambient noise levels from the University's continued operation of LBNL will generate noise levels which could conflict with applicable noise ordinances and standards.
Impact III-K-2:	Construction activities resulting from continued implementation of the 1987 LRDP could create significant adverse noise impacts on-site.
Impact III-K-3:	Since construction periods are of short term, approximately one to two years for site work and exterior construction, the overall off-site construction noise impacts are not expected to be significant.
Cumulative Impacts:	No cumulative noise impacts are anticipated from anticipated cumulative development at and in the vicinity of LBNL.

As a result of anticipated impacts to noise levels, the following mitigation measures, adopted as part of the LRDP EIR, as amended, are already required for the Proposed Project, and are therefore incorporated as part of the Proposed Project's description.

Mitigation Measure III-K-1:	Projected noise levels will be compared with ambient noise levels and the Berkeley Noise Ordinance limits, or other applicable regulations. Acoustical performance standards would be included in future construction documents. LBNL will continue to design, construct, and operate buildings and building equipment taking into account measures to reduce the potential for excessive noise transmission.
Mitigation Measure III-K-2:	Noise-generating construction equipment will be located as far as possible from existing buildings. If necessary, windows of laboratories or offices will be temporarily covered to reduce interior noise levels on-site.

Setting:

Noise is usually defined as an unwanted sound. Noise is typically measured in decibels, which is a logarithmic scale for expressing sound pressure-level energy. The A scale of noise measurement mathematically adjusts sound pressure levels that approximate the response of the human ear to different frequencies. Noise typically attenuates (diminishes) by about 6 dBA for every doubling of distance from the source. Thus, a noise measured at 90 dBA 50 feet from the source would be about 84 dBA at 100 feet, 78 dBA at 200 feet, 72 dBA at 400 feet, and so forth.

The construction and operation of the proposed building would create noise. This project involves construction within the LBNL site; there is no expansion into undeveloped areas of the property. Construction noise is a temporary phenomenon, but in this case the project work would extend for about a two-year period. Construction noise might be heard at offsite receptors, and levels could vary from hour to hour and day to day, depending on the

equipment in use, the operations being performed, and the noise environment at the receptors. The new building would require heating and cooling equipment, which creates a permanent, new noise source within the LBNL complex. The nearest sensitive noise receptors are nearby laboratories and existing homes in the Panoramic Hill neighborhood (about 1/3 mile south of the proposed new structure).

The major noise-producing phases of construction would occur with excavation, foundation and building erection, and exterior finishing. The foundation would be drilled piers poured in place and would not entail any pile driving.

Discussion:

a,d) Noise standards are addressed in local general plan policies and noise ordinances. A project could expose people to, or generate, noise levels in excess of these standards in two ways. First, a project could expose sensitive receptors to noise by introducing incompatible land uses (e.g., building a helipad next to a school) in an existing noise environment. Second, a project itself could create an increase in ambient noise levels that negatively affects existing nearby sensitive receptors (e.g., putting a petroleum refinery in a residential neighborhood).

For this project, some of the nearby residences are in the City of Oakland, and some in the City of Berkeley. These potential impacts are discussed below.

The proposed project site is in the eastern portion of LBNL and is within the city limits of Oakland. Because the land is controlled by a state entity (UC) and operated by a federal agency (DOE), it is exempt from local zoning and planning regulations. However, both the University and LBNL actively seek to cooperate with local agencies in planning matters to the extent feasible. Noise measurements were taken from nearby residences located in both the City of Berkeley and the City of Oakland.

The *Oakland Comprehensive Plan* contains guidelines for determining the compatibility of various land uses with different noise environments (City of Oakland, 1974). The Noise Element recognizes that some land uses are more sensitive to ambient noise levels than others, due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Present and proposed uses are consistent with the City of Oakland's General Plan designation of institutional use and resource conservation.

The City of Oakland also regulates short-term noise through city ordinances, which include a general provision against nuisance noise sources (Planning Code, Section17.120). The factors that are considered when determining whether the ordinance is violated include: a) the level, intensity, character, and duration of the noise; b) the level, intensity, and character of the background noise; and c) the time when, and the place and zoning district where, the noise occurred. Table VIII.9A presents the maximum allowable receiving noise standards for residential and civic land uses during the day. With the maximum construction noise expected to be associated with the project, noise levels at the property line of the nearest residences would not exceed the City standards.

TABLE VIII.9A
CITY OF OAKLAND
MAXIMUM ALLOWABLE RECEIVING NOISE STANDARDS FOR RESIDENTIAL AND CIVIC LAND USES[a], dBA

Cumulative Number of Minutes in Either the Daytime or Nighttime One Hour Period[b]	Daytime 7:00 a.m. to 10:00 p.m.	Nighttime 10:00 p.m. to 7:00 a.m.
20	60	45
10	65	50
5	70	55
1	75	60
0	80	65

a Legal residences, schools and childcare facilities, health care and nursing homes, public open space, or similarly sensitive land uses.
b The concept of "20 minutes in an hour" is equivalent to the $L_{33.3}$, which is a noise descriptor identifying the noise level exceeded one-third (33.3 percent) of the time. Likewise, "10 minutes in an hour," "5 minutes in an hour," and "1 minute in an hour" are equivalent to the $L_{16.7}$, $L_{8.3}$, and $L_{1.7}$, respectively. L_{max}, or maximum noise level, represents the standard defined in terms of "0 minutes in an hour."

SOURCE: Oakland Noise Ordinance No. 11895, 1996

The City of Berkeley's General Plan Noise Element also contains guidelines for determining the compatibility of various land uses with different noise environments (City of Berkeley). Generally, the noise level for residential, hotel, and motel uses is 60 dBA or less, while conditionally acceptable noise levels range from over 60 dBA to 75 dBA (may require insulation, etc.), and unacceptable noise levels are over 75 dBA. The City of Berkeley's Community Noise Ordinance sets limits for permissible noise levels during the day and night according to the zoning of the area. If ambient noise exceeds the standard, that ambient noise level becomes the allowable noise levels. For R-1 and R-2 residential areas, the receiving noise level (not to be exceeded by more than thirty minutes in any hour) is 55 dBA from 7:00 a.m. to 10:00 p.m., and 45 dBA from 10:00 p.m. to 7:00 a.m. For R-3 uses and above, the receiving noise level (not to be exceeded by more than thirty minutes any hour) is 60 dBA from 7:00 a.m. to 10:00 p.m., and 55 dBA from 10:00 p.m. to 7:00 a.m.

Construction noise levels would fluctuate depending on the particular type, number, and duration of use of various types of construction equipment. The effect of construction noise would depend upon the volume (expressed in dBA) generated, the distance between noise sources and the nearest noise-sensitive uses, and the existing noise levels at those uses. The City of Oakland allows short-term (less than 10 days) construction noise received in residential areas between the hours of 7:00 a.m. and 7:00 p.m. on weekdays to reach levels of 80 dba (65 dBA on weekends between 9:00 a.m. and 8:00 p.m.), and long-term construction noise (more than 10 days) to reach levels of 65 dBA on weekdays and 55 dBA on weekends. The City of Berkeley also requires that construction be restricted to the hours of 7:00 a.m. to 7:00 p.m. on weekdays, and the hours of 9:00 a.m. to 8:00 p.m. on weekdays and holidays. However, the City of Berkeley requires that maximum noise levels should be

controlled to not exceed 75 dBA at the nearest properties for mobile equipment and 60 dBA for stationary equipment.

To evaluate potential project impacts on the nearest noise-sensitive uses, simultaneous noise measurements were taken on the project site and at three residences in the Panoramic Hill neighborhood. Construction noise is typically generated by large, diesel-powered equipment. Since construction equipment was unavailable, a large commercial tree-limb grinder was used to generate noise at a suitable level. A noise meter was set up 50 feet from the grinder while simultaneous readings were taken at three locations in nearby neighborhoods. A summary of this data is presented in Table VIII.9B.

TABLE VIII.9B
CONSTRUCTION NOISE MEASUREMENT DATA (decibels)

Noise Level dB (Average of several measurements)	Project Site	365 Panoramic Way	Project Site	299 Panoramic Way	Project Site	45 Canyon Road
Ambient	54.1	45.0	54.7	45.8	51.5	47.0
Engine Only	82.3	45.8	85.0	50.6	85.9	50.4
Grinding wood	91.6	50.5	N/A	N/A	N/A	N/A

Notes:

- Tests made during dry weather, wind approximately 3-5 mph from west, temp approximately 70 F.
- Sites on Panoramic Way are in City of Berkeley, the site on Canyon Road is in the City of Oakland.
- "N/A" indicates that accurate measurements could not be obtained at these locations because wood grinding noises were highly variable during short periods of time.

The noisiest phases of construction (exterior finishing) could create noise at 89 dBA L_{eq} (50 feet). During field measurements, at the nearest residences, about 1,500 feet away, the measured noise levels diminished to about 50 dBA. The large amount of trees and shrubbery in the area between the homes and the project site help create favorable attenuation, by absorbing rather than reflecting sound energy. These measured values are supported by calculated attenuation. Thus, predicted construction noise levels would not exceed the Oakland Noise Ordinance (see above text and Table VIII.9A). 60 dBA or less is also an acceptable noise level in residential zones according to the City of Berkeley Community Noise Ordinance. Therefore, the project would not significantly increase the daytime noise levels at nearby sensitive receptors. The Proposed Project would not perform construction activities at night.

In addition, the LRDP EIR, as amended, anticipates that LBNL operation, development, and construction activities under the planning period would be likely to create noise impacts that exceed or conflict with City of Oakland and City of Berkeley noise ordinances. Where exceedances are expected to occur from construction activities — site work and exterior construction — of temporary duration (approximately one to two years), the analysis found that such impacts would be expected to be less than significant (Impact III-K-3). Field testing

confirmed that the nearest residences would not be subject to significant levels of noise during construction. The LRDP EIR, as amended, requires that construction be scheduled to avoid compounding construction activities. According to the LRDP EIR, construction contracts will limit construction to daytime activities.

The Proposed Project could generate noise from motor vehicle trips as well as from stationary sources such as Heating Ventilation Air Conditioning (HVAC) equipment. A change in noise level of less than three dBA is not discernible to the general population; an increase in average noise levels of three dBA is considered barely perceptible, while an increase of five dBA is considered readily perceptible to most people (Caltrans, 1998).

Traffic levels anticipated by the project would not result in perceptible project-related noise.

HVAC equipment involves fans and compressors that are designed by the manufacturer to operate quietly and unobtrusively. Since LBNL will install and operate the HVAC equipment in compliance with manufacturer's standards, the noise impact to nearby residents and adjacent land uses would be less than significant. (See Table VIII.9B for site-specific attenuation factors.)

Therefore, the Proposed Project would not expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance or LRDP EIR, as amended, during both the construction and operational phases of the project.

b) Much of the equipment at LBNL is very sensitive to groundborne noise or vibration. However, there are no existing sources of groundborne noise or groundborne vibration at or around the site. The project would not introduce any new sources of groundborne noise or vibration.

c) As discussed above, an increase of traffic-related noise of 3 dBA or more might be perceptible to nearby residents. Since the project-related traffic increases along all roadway segments would be less than double, there would be no permanent perceptible increase in ambient noise levels above those existing without the project. HVAC system noise would not be measurable off-site.

e, f) The project site is located approximately nine miles north of the Metropolitan Oakland International Airport (MOIA). The project site is not located within the Noise Impact Zone (65-dBA contour) for MOIA, adopted by the Airport Land Use Commission of Alameda County. The FAA considers residential land uses within noise environments of DNL 65 dBA or greater to be incompatible, if not acoustically treated. 65 dBA has also been established by California state law as the maximum acceptable noise level for residential land uses. The project site is not located within two miles of a private airstrip.

g) The Proposed Project would not exceed the Standards of Significance established by the programmatic LRDP EIR, as amended.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, mitigation measures: None. No significant impacts to noise levels are anticipated from the Proposed Project. However, the Proposed Project would incorporate LRDP EIR, as amended, Mitigation Measures III-K-1 and III-K-2.

Molecular Foundry Project-Specific Mitigation Measures: None required.

Sources:

Airport Land Use Commission of Alameda County, *Alameda County Airport Land Use Policy Plan*, July 16, 1986.

City of Oakland, *Oakland Comprehensive Plan* Noise Element, September 1974.

City of Oakland, *Oakland General Plan Land Use and Transportation Element, Draft Environmental Impact Report*, October 1997.

Governor's Office of Planning and Research, CEQA: California Environmental Quality Act Statutes and Guidelines, 1994.

U.S. Environmental Protection Agency, Noise from Construction Equipment and Building Operations, Building Equipment, and Home Appliances, December 1971.

U.S. Department of Transportation, Urban Mass Transportation Administration, Guidance Manual for Transportation, Noise and Vibration Impact Assessment, July 1995.

---

12. POPULATION AND HOUSING

LRDP EIR, as amended:

The impact of LBNL projects on population and housing would be considered significant if they would exceed the following Standards of Significance, established by the LRDP EIR, as amended:

- Induce substantial growth or concentration of population;
- Displace a large number of people;
- Conflict with the housing and population projections and policies set forth in the General Plan.

The following relevant impacts to population and housing have been anticipated and analyzed pursuant to CEQA, as part of the programmatic LRDP EIR, as amended, from which this analysis is tiered:

Impact III-H-1:	Population growth associated with continuation of existing LBNL activities, including continued implementation of the 1987 LRDP, is not expected to have a significant adverse impact.
Impact III-H-2:	Population growth associated with continuation of existing activities, including renewal of the contract term, could create an impact on the availability of both owned and rented housing.
Cumulative Impacts:	No significant cumulative impacts upon employment or housing are projected as a result of cumulative development at and in the vicinity of LBNL.

Because no significant impacts were identified in the LRDP EIR, as amended, no mitigation measures were identified.

Discussion:

a through c) The Proposed Project would occupy a mostly undeveloped site, partially occupied by a paved surface parking lot. The project would therefore not displace existing housing or residents. The project would extend the existing roadway network to the project site, and northward to the Building 31 parking lot. However, the new roadway segment would directly serve the project site, which does not include residential uses.

Growth at the LBNL site is controlled by the 1987 LRDP. The LRDP anticipates that total population growth at LBNL could increase from approximately 2,850 in 1987 to approximately 4,750 at buildout. LBNL is currently approximately 400 people below its population projection. The proposed Molecular Foundry would be occupied by approximately 137 staff, students, and visitors to LBNL. This would result in a remaining balance of approximately 260 persons below the 4,750 growth-projection that is identified in the 1987 LRDP, and analyzed in the LRDP EIR, as amended. Of these 137 staff positions, 6 would be directors who currently work at LBNL and would not be replaced; approximately 36 would be graduate students from the UC Berkeley campus who would not have driving access to LBNL; and approximately 73 would be filled from scientific, technical, and administrative professionals new to the LBNL site. An additional 22 professional positions would be filled by staff already working elsewhere at LBNL and who would create vacancies that would most likely be filled within one year of their leaving. For that reason, all 137 positions are considered in the analysis for impacts.

It is assumed that many of the new employees would already live in the Bay Area. Visitors would be temporary and would therefore be visiting and/or already employed elsewhere in the Bay Area. The Proposed Project would therefore not directly or indirectly induce substantial growth in the area.

d) The Proposed Project would not exceed the Standards of Significance established by the programmatic LRDP EIR, as amended.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, mitigation measures: None. No significant impacts from increases in the number of LBNL employees would result from the Proposed Project.

Molecular Foundry Project-Specific Mitigation Measures: None required.

---

13. PUBLIC SERVICES

LRDP EIR, as amended:

The impact of LBNL projects on public services would be considered significant if it would exceed the following Standards of Significance, established by the LRDP EIR, as amended:

- Require additional police and/or sheriff staff and equipment to maintain acceptable service ratios;

- Require additional fire protection staff or equipment to maintain an acceptable level of service (i.e., response time, equipment);
- Require expansion or realignment of the existing school system; and
- Affect or require the designation of substantial additional parkland to remain in conformance with locally acceptable or adopted park standards.

The following impacts to public services have been anticipated and analyzed pursuant to CEQA, as part of the programmatic LRDP EIR, as amended, from which this analysis is tiered:

Impact III-L-1:	The construction of additional facilities and any increased population would not cause increased impacts on local police and fire protection services.
Impact III-L-2:	The construction of additional facilities and any increase in population according to the 1987 LRDP would not cause significant impacts on local school systems.
Impact III-L-3:	Development proposed under the 1987 LBNL LRDP would increase demand for recreational services.
Cumulative Impacts:	No significant cumulative impacts upon the provision of public services is anticipated as a result of cumulative development at or in the vicinity of LBNL.

No mitigation measures were identified by the programmatic LRDP EIR, as amended. All impacts were found to be less than significant.

Discussion:

a) Fire and Police Protection. LBNL maintains its on-site fire protection services through contract with Alameda County and its own security force. These units are staffed appropriately for LBNL's needs for fire suppression and security protection. The current level of staffing is adequate to support fire and police protection services for the Proposed Project. Currently, three fire trucks and an ambulance are available on-site at all times. The LBNL security unit is part of the UC Police Services and includes sworn officers and contract protective service officers. Contracted personnel staff the LBNL entry gate kiosks. The Proposed Project is within an area already served by adequate fire and police protection services, and would not result in the need for additional or expanded security or fire protection facilities. However, the construction phase of the project could affect response times to the project site and its vicinity as a result of any potential temporary construction-related roadway lane closures and detours. The project would be supported by a collaborative, multidisciplinary team that would include engineers and project managers, as well as industrial hygiene, environmental protection, design and construction safety, ergonomics, fire protection, and radiation protection professionals from LBNL's EH&S Division. Construction activities will be overseen so as to comply with applicable safety requirements of LBNL, DOE, CAL/OSHA, and federal OSHA. All appropriate fire, emergency medical, and police services would be consulted and apprised of every appropriate aspect of project design and construction.

Schools, Parks and other Public Facilities. The Proposed Project would contain primarily office, teaching, and laboratory spaces within the Molecular Foundry building. The uses proposed for this building would not generate the need for additional school, park, or other public facilities.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, mitigation measures: None. No significant impacts would result from the Proposed Project.

Molecular Foundry Project-Specific Mitigation Measures: None required.

Sources:

Lawrence Berkeley Laboratory, *Draft and Final Supplemental Environmental Impact Report (SEIR) for the Proposed Renewal of the Contract Between the United States Department of Energy and the Regents of the UC for the Operation and Management of the Lawrence Berkeley Laboratory*, prepared by the University of California and Lawrence Berkeley Laboratory, with the assistance of Ira Fink and Associates, Inc., September 1992.

---

14. RECREATION

LRDP EIR, as amended:

The LRDP EIR, as amended, does not specifically analyze the impact of anticipated development on existing neighborhood parks and regional parks or other recreational facilities.

Discussion:

a,b) The proposed Molecular Foundry complex would be located near LBNL open space, as well as the 205-acre Claremont Canyon, the 2,077-acre Tilden Park, recreational areas of the UC Berkeley in the Strawberry Canyon area, and the UC Berkeley campus itself. Claremont Canyon has no developed facilities and Tilden Park includes a lake, nature area, Botanical Garden and a variety of activities. The UC Berkeley campus and many of the adjoining University lands are open for walkers and hikers.

The proposed Molecular Foundry complex would be staffed by an estimated 140 persons, of which an estimated 94 would be new staff persons. The new staff would not, by virtue of their small numbers, cause an impact to large-scale open spaces or to the UC Berkeley campus. Smaller local parks are located north of LBNL within the City of Berkeley. In relationship to the proposed project site, these parks are outside of walking range, are located in residential areas where parking would be limited, and would not likely be used by LBNL staff unless they were already residents in the area.

The Molecular Foundry would have a negligible or no impact on local or regional recreational facilities near LBNL.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, mitigation measures: None. No significant impacts would result from the Proposed Project.

Molecular Foundry Project-Specific Mitigation Measures: None required.

---

15. TRANSPORTATION/TRAFFIC

LRDP EIR, as amended:

The impact of LBNL projects on transportation and traffic would be considered significant if it would exceed the following Standards of Significance, established by the LRDP EIR, as amended:

- Cause intersection levels of service (LOS) to fall below LOS D or cause a significant incremental decline in service at an intersection currently operating at LOS E or below;
- Have inadequate parking and internal circulation to accommodate projected traffic so that off-campus areas are adversely affected; and,
- Fail to include provisions for pedestrian and bicycle circulation, and bicycle and motorcycle parking and security.

The following relevant impacts to transportation and traffic have been anticipated and analyzed pursuant to CEQA, as part of the programmatic LRDP EIR, as amended, from which this analysis is tiered:

Impact III-I-1:	Incremental increases in traffic are expected due to projected increases in the number of employees and visitors at LBNL.
Impact III-I-2:	The ratio of parking spaces to LBNL employees will decrease during the LRDP implementation period.
Cumulative Impacts:	Cumulative population growth and facility development in the vicinity of LBNL has resulted in a deterioration of levels of service at intersections on feeder routes into the UC Berkeley campus and LBNL area.

As a result of anticipated impacts to transportation and traffic, the following mitigation measures, adopted as part of the LRDP EIR, as amended, are already required for the Proposed Project, and are therefore incorporated as part of the Proposed Project's description:

Mitigation Measure III-I-Ia:	Discourage single-occupant-vehicle use and encourage the use of other transportation options. LBNL will continue to implement its Transportation System Management (TSM) Program. The specific features of this program include:

Establishing transportation modal-split goals for LBNL which will result in a reduction in the number and percentage of single-occupant automobiles being driven to and from LBNL;

Assigning a transportation planner to coordinate the design and implementation of TSM programs;

Promoting carpools by creating a carpool matching program;

Providing preferential carpool parking;

Developing a vanpooling program through funding support of Berkeley TRIPS;

Permitting staggered (flex-time) work hours;

Developing an annual monitoring program to evaluate the programs in relation to established goals and identify new elements which should be added to the program;

Promoting the TSM programs by giving orientation briefings to new employees, providing information aids to be distributed to LBNL employees, organizing an information center, and selling transit tickets on-site at LNBL;

Reviewing LBNL shuttle service and transit interface facilities; and

Reviewing bicycle routes and storage facilities for improvements.

Mitigation Measure III-I-1b: LBNL will conduct bi-annual peak hour traffic counts in and around LBNL. In particular, the bi-annual count will include the Gayley Road corridor between Hearst Avenue and Bancroft/Piedmont.

Mitigation Measure III-I-1c: If and at such time as the level of service at intersections along the Gayley Road corridor reaches "D," a review of necessary improvements will be conducted with UC Berkeley;

Mitigation Measure III-I-1d: LBNL will pay for its fair share of allowable and necessary signalization improvements along the Gayley Road corridor proportional to LBNL's share of increases in traffic.

Mitigation Measure III-I-1e: Details of the Gayley Road corridor improvements, including environmental assessment of the improvements, will be reviewed at the time the thresholds are reached.

Mitigation Measure III-I-2:	LBNL will continue to implement and monitor the implementation of its Transportation System Management Program.
Cumulative Impacts:	The cumulative measures undertaken by the City of Berkeley, UC Berkeley, and LBNL should result in a net improvement in the traffic and parking conditions in the immediate vicinity of LBNL and UC Berkeley.

Discussion:

a, b) Existing traffic level of service (LOS) conditions were assessed at the following 5 key (gateway) intersections for weekday a.m. and p.m. peak traffic hours:

- University Avenue and Shattuck Avenue (southbound) – signalized
- Hearst Avenue and La Loma Avenue / Gayley Road – signalized
- Gayley Road and Stadium Rim Way – all-way stop-sign control
- Piedmont Avenue and Dwight Way – signalized
- Grizzly Peak Road and Centennial Drive – all-way stop-sign control

The LOS concept is a qualitative characterization of traffic conditions associated with varying levels of traffic, based on delay and congestion. Descriptions of conditions range from LOS A (free-flow condition) to LOS F (jammed condition). LOS C or better are generally considered to be satisfactory service levels, while LOS D is minimally acceptable, LOS E is undesirable, and LOS F conditions are unacceptable.

Traffic counts were conducted at each of the study intersections when UC Berkeley was in session.[14] All of the 5 study intersections currently operate at LOS B during a.m. and p.m. peak hours, except the all-way stop-sign-controlled intersection of Gayley Road / Stadium Rim Way, which operates at LOS F during both peak hours.

Net new trip generation was estimated based on proposed maximum staff levels and expected work hours (by category of worker), as well as commute travel mode splits, trip distribution pattern, and data pertaining to non-commute trips gathered for the LBNL LRDP EIR analysis. The LBNL shuttle system provides frequent service between downtown Berkeley and the LBNL site, as well as service within the LBNL site between Lab buildings, with a shuttle bus stop in front of the project site.[15] Given the nature of the work that would be conducted in the proposed building, the scientists (staff and visiting) would work irregular hours. For example, on some days, a scientist might work hours analogous to 8:00 a.m. to 5:00 p.m. work days typical of office workers, but on other days that same scientist might work 10:00 a.m. to 7:00 p.m., or might work on a Saturday instead of one of the weekdays. The irregularity of work hours would result in varied peak-hour trips from day to day. The estimate of project-generated new vehicle trips is based on conservative assumptions so as to not understate potential impacts associated with the Proposed Project.

[14] Peak-period traffic counts were conducted at the study intersections in November 2000, February 2002, and March 2002 by Wilbur Smith Associates for the LBNL LRDP EIR analysis.

[15] The Laboratory operates a free shuttle bus service within the LBNL campus, and between the campus and downtown Berkeley (connecting with the Berkeley BART Station and AC Transit bus lines). Another off-site shuttle provides express service to and from the Rockridge BART Station at select commute hours. The principal off-site shuttle operates from 6:30 a.m. to 6:50 p.m., running every ten minutes up until 5:50 p.m., when buses run at 20-minute intervals.

Two scenarios were prepared – one based on observed temporal distribution of peak-hour commute trips exhibited by similar categories of workers at Buildings 62, 66, 72, 74, and 84 in proximity to the project site, and the other based on a reasonably higher (conservative) temporal distribution of those trips. The latter scenario yields about 50 percent higher peak-hour vehicle trips than the first scenario. The Proposed Project would generate up to about 30 to 35 net new vehicle trips during the morning and evening peak hours (see Table VIII.15a). About half of those trips would pass through the main (Blackberry Canyon) gate; the remaining trips would use the Strawberry Canyon gate, split between Grizzly Peak Road / Centennial Drive and Stadium Rim Way / Centennial Drive.

Under the "Existing plus Project" scenarios, levels of service at all study intersections would not change with the addition of traffic from the Proposed Project; i.e., service levels would remain at LOS B during the two analysis periods, except at the Gayley/Stadium Rim intersections, where delays within LOS F would occur; the increase in average vehicle delay caused by the addition of project traffic during both peak hours would be no more than about two seconds during both peak hours.

Under cumulative (2020) conditions, traffic volumes would increase on area roadways and at study intersections, due to development foreseen by LBNL under its revised LRDP, and by the cities of Berkeley and Oakland, and by UC Berkeley. Recent (2001) estimates of increases in roadway and intersection traffic volumes were presented in the University of California at Berkeley's *Northeast Quadrant Science and Safety (NEQSS) Projects* EIR and the City of Berkeley's *General Plan Update EIR*. The study intersections would continue to operate at acceptable levels of service (LOS D or better) during the a.m. and p.m. peak hours, except at the Gayley Road / Stadium Rim Way intersection, where delays within LOS F would increase. As described above, new traffic generated by the Proposed Project would be modest and would be dispersed among roads accessing the entrance gates, and therefore levels of service at the key (gateway) intersections would not change with the addition of project traffic. The contribution of project-generated traffic to LOS F conditions at Gayley/Stadium Way would be less than significant (i.e., the increase in average vehicle delay caused by the addition of project traffic at the latter intersection would be less than two seconds during both peak hours).

The Proposed Project therefore would have a less than significant impact on traffic conditions on the area roadway system.

c) There would be no change to air traffic patterns associated with the project.

d) The project would neither alter the physical configuration of the existing roadway network serving the area, nor introduce unsafe design features or incompatible uses into the area. The physical and traffic characteristics of area roadways (e.g., traffic signal and stop-sign control, pedestrian crosswalks and crossing signals, and bicycle lanes) would safely accommodate project-generated traffic (both vehicular and non-motorized). The project's effect on safety would be less than significant.

e) The proposed system of access and egress for the parking area serving the proposed building would adequately accommodate the mix of users. Access to the building for emergency vehicles would be provided from Lawrence Road and from the building's parking area. There would be less than significant impacts associated with project general and emergency access.

TABLE VIII.15a
NET NEW PEAK-HOUR VEHICLE TRIP GENERATION ESTIMATE

AM Peak Hour

Category	Number of People	Work Hours	Drive Alone (59.4%)	Rideshare (8.8%)	Public Transit (8.3%)	Walk / Bike / Shuttle (21.2%)	Motorcycle (2.3%)	Net New Person Trips	Net New Vehicle Trips
- Directors (6 total)	6	n/a (*not new*)	0	0	0	0	0	0	0
- Scientific Staff (25 total - "irregular") /a/	25	arr. 7:30-9:00A /b/	7	1	1	2	0	11	7
- Tech. Staff (18 total - regular)	18	arr. 7:00-8:30A /b/	5	1	1	2	0	8	5
- Admin. Staff (10 total - regular)	10	arr. 7:00-8:30A /b/	3	0	0	1	0	5	3
- Visiting Scientists (25-42 total - "irregular") /a/	42	arr. 7:00-9:00A /b/	11	2	2	4	0	19	12
- Students/Post Docs (36 total - "irregular") /a/	36	irregular hours; assume off-peak	0	0	0	0	0	0	0
TOTAL	**137**	**Inbound Trips**	**25**	**4**	**4**	**9**	**1**	**43**	**28**
							TOTAL VEHICLE TRIPS /c/ =		**32**

PM Peak Hour

Category (*see above*)	Number of People	Work Hours	Drive Alone (59.4%	Rideshare (8.8%)	Public Transit (8.3%)	Walk / Bike / Shuttle (21.2%)	Motorcycle (2.3%)	Net New Person Trips	Net New Vehicle Trips
- Directors	6	n/a (*not new*)	0	0	0	0	0	0	0
- Scientific Staff	25	dep. 4:30-8:00P /b/	7	1	1	2	0	11	7
- Tech. Staff	18	dep. 4:00-5:30P /b/	5	1	1	2	0	8	5
- Admin. Staff	10	dep. 4:00-5:30P /b/	3	0	0	1	0	5	3
- Visiting Scientists	42	dep. 4:30-8:00P /b/	11	2	2	4	0	19	12
- Students/Post Docs	36	assume off-peak	0	0	0	0	0	0	0
TOTAL	**137**	**Outbound Trips**	**25**	**4**	**4**	**9**	**1**	**43**	**28**
							TOTAL VEHICLE TRIPS /c/ =		**33**

/a/ "Irregular" - workers who may, e.g., work 7am-7pm one day, then work 10a-7p the next day, vs. working regular hours every day.

/b/ Assumes arrivals and departures would be conservatively higher than the arrival patterns observed during surveys of parking lots for Buildings 66/62, 72, and 74/84; i.e., 45% of workers (or 50% more than survey indicated) would arrive and depart during the peak hour within the peak two-hour commute periods (7-9am and 4-6pm).

/c/ LBNL LRDP trip generation rates indicate that the a.m. peak-hour outbound rate is about 13% of the total rate, and the p.m. peak-hour inbound rate is about 15% of the total rate.

SOURCES: Environmental Science Associates, and travel mode split from the LBNL Employee Transportation Survey, December 1998

f) LBNL offers parking privileges to full-time employees and visitors, but not to graduate students, who are otherwise present on the UC Berkeley campus and have access to LBNL's free shuttle system. Given that the 6 directors already work at the LBNL site and would not be replaced, the number of Molecular Foundry staff who could potentially require parking (including staff who would replace the estimated 24 non-Director employees already on site) would approach 94 people. However, this number would be further reduced by applying LBNL's current rate of vehicle-mode commuters (drive alone plus carpool) to that number (the remainder would presumably take public transportation or would find alternate modes of transportation). The adjusted estimated parking demand for the Proposed Project, then, would be about 63 spaces.

The Proposed Project would displace 18 existing spaces in a surface lot, and provide 16 new spaces on the upper level of the subsurface utility plant / parking facility. The estimated demand for parking spaces that would be generated by the Proposed Project would be accommodated through a combination of the above-cited on-site parking supply and the other LBNL parking spaces connected to the project building by the LBNL shuttle bus. Approximately 40- to -55 additional spaces would be required to serve the project and to maintain LBNL's desired parking ratio of 1.7 full-time equivalents (employees) per parking space. Those additional spaces would come from the general LBNL pool of about 2,400 parking spaces. Because there would be no spillover of parking demand from the project site into adjacent neighborhoods, any parking impact would be internal to the LBNL site, and therefore, the Proposed Project would have a less than significant impact on parking conditions after project occupancy.

g) The LBNL free shuttle bus system provides frequent service between downtown Berkeley (which is well-served by public transportation, including services provided by BART and AC Transit) and the LBNL site, as well as service within the LBNL site between Lab buildings, with a shuttle bus stop in front of the project site. Another off-site shuttle provides express service to and from the Rockridge BART Station at select commute hours. The principal off-site shuttle operates from 6:30 a.m. to 6:50 p.m., running every ten minutes up until 5:50 p.m., when buses run at 20-minute intervals.

The project would not conflict with adopted policies, plans, or programs supporting alternative transportation.

h) The Proposed Project would not exceed the Standards of Significance established by the programmatic LRDP EIR, as amended.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, Mitigation Measures: None. No significant traffic- or circulation-related impacts would result fro the Proposed Project.

Molecular foundry Project-Specific Mitigation Measures: None required.

16. UTILITIES AND SERVICE SYSTEMS

LRDP EIR, as amended:

The impact of LBNL projects on utilities and service systems would be considered significant if it would exceed the following Standards of Significance, established by the LRDP EIR, as amended:

- **Water**: Propose a significant increase in the consumption of potable water, or require a substantial expansion of water supply treatment or distribution facilities;
- **Wastewater Treatment**: Require substantial expansion of wastewater treatment and distribution capacity; and
- **Solid Waste**: Utilize a landfill which does not have sufficient available capacity to accommodate the Proposed Project.

The following relevant impacts to utilities and service systems have been anticipated and analyzed pursuant to CEQA, as part of the programmatic LRDP EIR, as amended, from which this analysis is tiered:

Impact III-M-1:	Projected development according to the 1987 LRDP may create demands with regard to existing wastewater and sanitary sewer systems.
Impact III-M-2:	Development proposed under the 1987 LBNL LRDP would increase the demand for domestic water. This demand is well within the capacity of the existing ties to EBMUD and the LBNL water distribution system. This demand is not considered significant.
Impact III-M-3:	Development proposed under the 1987 LBNL LRDP would increase the usage of natural gas. The projected usage is within the capacity of the existing PG&E and LBNL systems, except for the main extensions required for new buildings. This increased usage is not considered significant.
Impact III-M-4:	The development of the LBNL East Canyon site as currently planned will require rerouting of the PG&E 120 KV service into LBNL.
Impact III-M-5:	Development proposed under the 1987 LBNL LRDP would increase the usage of electrical power. PG&E has the capacity to supply this power. This increased usage is not considered significant.
Cumulative Impacts:	Cumulative development at and in the vicinity of LBNL is not expected to result in adverse impacts to utilities and waste services.

Additional mitigation measures related to hazardous waste are discussed in Section VI.7, above.

As a result of anticipated impacts to utilities and service systems, the following mitigation measures, adopted as part of the LRDP EIR, as amended, are already required for the Proposed Project, and are therefore incorporated as part of the Proposed Project's description:

Mitigation Measure III-M-1: Prior to construction of any project which may add significant sewer load to the city sanitary sewer system, LBNL will investigate the potential impact of the project on the city system. LBNL will identify mitigation measures to accommodate the sewer load if the impact investigation indicates that the city system could not accommodate the additional sewage. LBNL will reimburse the City of Berkeley and/or EBMUD for its fair share of allowable and necessary sewer improvement capital costs which are needed to accommodate increased demand and mitigate sewer impacts resulting from implementation of the LBNL LRDP.

Discussion:

a–g) The project is located adjacent to an urban area and is already served by utilities and service systems. It is not anticipated that additional needs created by the project would be sufficient to necessitate construction of new or expanded systems.

The LBNL facility receives its water from the East Bay Municipal Utility District (EBMUD). The primary source of supply is the Shasta Tank, and EBMUD's one million-gallon capacity Berkeley View Tank provides a secondary water supply source. In addition, two 200,000-gallon on-site storage tanks hold an emergency supply in the event of interruption of EBMUD service; a third 200,000-gallon emergency water tank is under construction in the East Canyon area. The existing distribution system supplies water for all laboratory uses and has sufficient capacity to meet the flow rate and duration requirements for both daily use and fire protection. Although the project would be expected to increase use by approximately 7,050 gallons per day, it would not cause a significant impact because unrestricted water volume is available from EBMUD.

Wastewater from LBNL is carried via a gravity flow system through two monitoring stations, one located at Hearst Avenue and the other at Centennial Drive in Strawberry Canyon. The project would be served by the Centennial Drive Station. It connects first to the University of California's sewer system, then to the City of Berkeley's public sewer system, and then to an EBMUD-operated intercepting sewer, which transports effluent to a regional wastewater treatment plant located southwest of the interchange of I-80 and I-580 in Oakland. The facility is owned by EBMUD and serves six East Bay cities and the Stege Sanitary District. Increase at this large capacity plant would be minimal.

In 1990, UC agreed to contribute $250,000 to the City of Berkeley for sewer improvements that would mitigate the impact of and accommodate new University projects. The proposed building would connect to existing sewer lines, but is not expected to cause a significant impact.

Because of LBNL's hillside location, a storm-drainage system has been installed which it discharges into the North Fork of Strawberry Creek to the north and Strawberry Creek to the south. Runoff from the project site would be discharged into a detention basin which incorporates Strawberry Creek. An existing 12-inch storm

drain that crosses the site would be re-routed to the lower access road. There would be some incremental increase of flow into the detention basin and the creek due to an increase in impermeable surface area associated with the project. The existing system provides for runoff intensities expected in a 25-year maximum-intensity storm.

Non-hazardous solid waste generated at the project site would be collected by Richmond Sanitary Service and taken to the Richmond Landfill. Disposal of solid waste generated during construction would be the responsibility of the contractor. Although operations at the new building will create additional waste in proportion to the number of employees stationed there, its volume is not anticipated to be great enough to significantly affect existing facilities. LBNL has a recycling program, which it continues to expand and update.

The project would include an on-site 8,000-gsf utility plant that would house mechanical and electrical equipment to serve the main building. It would contain systems for heating, cooling, and purification of air and water to be used in the Foundry. In addition, it would hold a stand-alone diesel-engine generator to provide a source of emergency power. All normal operating electrical power would be supplied by Pacific Gas and Electric Company through the Lab's existing infrastructure and the Grizzly Peak substation. Analysis of the environmental effects of construction of the proposed utility plant is considered throughout this document as part of the Proposed Project.

h) The Proposed Project would not exceed the Standards of Significance established by the programmatic LRDP EIR, as amended.

Summary of Impacts and Mitigation Measures:

Potentially significant impacts not mitigated by LRDP EIR, as amended, mitigation measures: None. The Proposed Project would incorporate LRDP EIR, as amended, Mitigation Measure III-M-1. As a result, no significant impact to utilities or service systems would result from the Proposed Project.

Molecular Foundry Project-Specific Mitigation Measures: None required.

Sources:

Lawrence Berkeley National Laboratory, *Long Range Development Plan*, PUB-5187, August 1987.

Lawrence Berkeley National Laboratory, *Site Development Plan DEIR*, December, 1986.

Smith Group, *Molecular Foundry Facility LBNL Concept Design Report*, April 2002.

Project Description and Plans.

17. CUMULATIVE IMPACTS

PROJECTS IN VICINITY OF PROPOSED PROJECT

Planned, pending, and/or reasonably foreseeable projects in the area of the Proposed Project include:

- A foreseeable proposal to construct an approximately five-story, 60,000 gsf office building near LBNL's Blackberry Gate entrance ("50X Building"). This project would be a "decompression" building envisioned to provide relief for overcrowded office facilities elsewhere on-site; it would not result in an increase of LBNL's population nor increase in traffic impacts. Construction would be anticipated to take place between 2004 and 2006. Should this proposal move forward, an environmental analysis of and decision regarding this project is expected to occur in early 2003.

- A foreseeable proposal to design and implement a new Long Range Development Plan (LRDP) for LBNL; this LRDP would guide LBNL's development for approximately 20 years. The proposed new LRDP is anticipated to identify new population and space growth projections for LBNL, although growth would be projected to occur at approximately the same rate as has been experienced at LBNL during its recent history (approximately 1.3 percent per year). The main differences between the current LRDP and the upcoming proposed new LRDP would be realized during the later phases of the planning period, sometime after 2010. Should this proposal move forward, an environmental analysis of and decision regarding this project is expected to occur in late 2003.

- Development in the surrounding area includes growth and development within the City of Berkeley as envisioned in the 2001 Berkeley General Plan and EIR; within the northeastern portion of the UC Berkeley campus as described in the *Northeast Quadrant Science and Safety Projects and 1990 Long Range Development Plan*, January 2002 (NEQSS Project); and as expected to be projected for the overall UC Berkeley campus in the forthcoming UC Berkeley Long Range Development Plan and EIR. The 2001 City of Berkeley General Plan allows for steady growth and development, but, given a lack of substantial undeveloped space in the City, at a relatively even pace with an emphasis on in-fill development. Projections include a population increase of approximately 7,000 people (a roughly six percent increase), approximately 3,300 new household units (a roughly eight percent increase), and approximately 3,700 new jobs (a roughly five percent increase) by the year 2020. The NEQSS project would construct approximately 324,400 gsf of buildings (demolition of existing 100,000 gsf, construction of 430,000 gsf) 140 parking spaces and approximately 400 full-time equivalent (FTE) employees to the northeastern quadrant of the UC Berkeley campus after a construction period projected to last from approximately 2002 to 2005. The forthcoming UC Berkeley LRDP revision and EIR would likely project increases in population and built space by the year 2020.

  The UC Berkeley NEQSS project and the forthcoming LRDP revision are scheduled to gradually begin to take effect after 2005, as UC Berkeley has agreed with the City of Berkeley that it will not begin to substantially increase its population prior to that time, and the NEQSS project will not be completed and operational until after 2005.

CUMULATIVE IMPACT AREAS

The Proposed Project would not reasonably be expected to result in significant cumulative impacts with the following environmental resource areas: Agricultural resources, Mineral resources, and Recreation.

Aesthetics/Visual Quality

Implementation of the Proposed Project would result in a visual change to the LBNL and surrounding hillside environment. The proposed 50X building would have a similar project-specific result. However, both projects would be visible from limited and mutually exclusive vantage points, and neither would take place in an area that is not currently surrounded by development. None of the other projects identified would noticeably add to a visual quality cumulative impact with the Proposed Project. In addition, the Proposed Project is consistent with the LRDP and LRDP EIR, as amended, which addressed cumulative visual impacts associated with LBNL growth.

Air Quality

The Proposed Project would not pose any individually significant air impacts, nor would it result in any significant cumulative air quality impacts. It would be consistent with the LBNL LRDP, and would neither conflict with nor obstruct implementation of the Ozone Attainment Plan, the Bay Area 2000 Clean Air Plan, nor the Carbon Monoxide Maintenance Plan. The Proposed Project would not violate any applicable air quality standard or contribute substantially to any existing or projected air quality violations. It would not result in a cumulatively considerable net increase of any criteria pollutant, including ozone and its precursors (i.e., ROG and oxides of Nitrogen), or PM-10. No construction or operational emissions—either criteria pollutants or toxic air contaminants—would be expected to exceed any regional, state, or federal thresholds of significance. As operational details and estimates are further developed, the Molecular Foundry project would undergo review and permitting processes from BAAQMD for operational emissions and potential emergency diesel generator emissions. BAAQMD, through its discretionary permitting authority, would require implementation of feasible measures to further reduce construction and operational air impacts and prohibit significant health risks. The Proposed Project would not create or substantially contribute to a significant TAC impact. Project emissions of TACs are expected to be very low in general and negligible at the distance of the nearest residential areas. Moreover, there are no nearby significant ambient TAC concentrations to which the Proposed Project might cumulatively contribute, and any contribution by the Proposed Project would not be cumulatively considerable in any event. In addition, the Proposed Project is consistent with the LRDP and LRDP EIR, as amended, which addressed cumulative air impacts associated with LBNL growth.

Biological Resources

The Proposed Project and the proposed 50X Building would not likely affect any special status species. However, each project would take place in an area that theoretically could be traversed by a member of the state- and Federally-designated threatened Alameda whipsnake species. On the other hand, neither project would take place in or reduce designated Critical Habitat of the Alameda whipsnake, and the Proposed Project and proposed Building 50X project would employ appropriate whipsnake avoidance measures. Other identified projects would likely take place in currently developed areas. In addition, the Proposed Project is consistent with the LRDP and LRDP EIR, as amended, which addressed cumulative biological resources impacts associated with LBNL growth.

Cultural Resources

The Proposed Project would not be located in the vicinity of any other planned projects, nor would it be expected to negatively impact significant cultural resources. In addition, the Proposed Project is consistent with the LRDP and LRDP EIR, as amended, which addressed cumulative historical resources impacts associated with LBNL growth.

Geology, Soils and Seismicity

The Proposed Project would not be located in the vicinity of any other planned projects, nor would it be expected to create any substantial impacts in the area of geology, soils, or seismicity. In addition, the Proposed Project is consistent with the LRDP and LRDP EIR, as amended, which addressed cumulative geology, soils, and seismicity impacts associated with LBNL growth.

Hazards and Hazardous Materials

The Proposed Project would generate relatively small amounts of TAC emissions in the area. The proposed 50X building would not generate TAC emissions, as it would be exclusively an office building and because it would not generate new traffic trips. The proposed NEQSS and UC Berkeley LRDP growth would likely generate TAC emissions. However, because these projects, when combined, are not expected to create or add to any toxic air "hot spots" or other areas of significant impact in the area the Proposed Project would affect, this would not be a significant impact. Generation of hazardous materials (not air emissions) would be of relatively small scale and would follow LBNL's strict handling, storage, and disposal procedures. The proposed buildings would be constructed to modern, state-of-the-art fire and earthquake standards. In addition, the Proposed Project is consistent with the LRDP and LRDP EIR, as amended, which addressed cumulative hazards and hazardous materials impacts associated with LBNL growth.

Hydrology and Water Quality

The Proposed Project would result in an approximately 1.5-acre loss of permeable surface. The proposed 50X building proposal would likely result in a similar loss of permeable surface; however, these two projects would take place in different watersheds and would represent only an incremental change in each. The proposed City of Berkeley and UC Berkeley projects would generally be in-fill on existing paved surfaces. In addition, the Proposed Project is consistent with the LRDP and LRDP EIR, as amended, which addressed cumulative hydrology and water quality impacts associated with LBNL growth.

Land Use

The Proposed Project would not be located in the vicinity of any other planned projects, nor would it be expected to result in any negative land use impacts, particularly in concert with other projects. The proposed 50X Building project would, like the Molecular Foundry Building, be located on the LBNL hill site near other major development and utility lines. In addition, the Proposed Project is consistent with the LRDP and LRDP EIR, as amended, which an addressed cumulative land use impacts associated with LBNL growth.

Noise

Noise effects from the Proposed Project construction could combine with noise from other construction projects to generate cumulative impacts. However, as described in traffic, above, construction of the projects identified in this section would be staggered over a period of years and there would not be a point at which all projects were fully under construction. In addition, the projects are separated physically and by intervening terrain such that noise impacts from the other projects should not noticeable to the same receptors as noise from construction of the Proposed Project. In addition, the Proposed Project is consistent with the LRDP and LRDP EIR, as amended, which addressed cumulative noise impacts associated with LBNL growth.

Population and Housing

The Proposed Project would not induce a substantial growth in local population, nor would it displace any people or conflict with any housing or population projections in the LRDP or any other local planning documents. The proposed 50X Building project would not add new employees to the LBNL site. City and UCB Campus projects would likely induce employment growth and, consequently, housing demand, but these should not be measurably affected by the Proposed Project. In addition, the Proposed Project is consistent with the LRDP and LRDP EIR, as amended, which addressed cumulative population and housing impacts associated with LBNL growth.

Public Services

LBNL maintains its own primary public services (fire protection, security, health and safety); the proposed 50X project would decompress existing on-site employees and would thus not substantially add to demand for services. Although City and UCB Campus projects would be expected to incrementally increase demand for off-site services over time, Proposed Project-related demand for off-site services would be negligible. In addition, the Proposed Project is consistent with the LRDP and LRDP EIR, as amended, which addressed cumulative public services impacts associated with LBNL growth.

Traffic and Circulation

The most acute increases in NEQSS construction-related traffic would occur between 2002 and 2005. The Proposed Project and the proposed 50X Building project construction would take place between 2004 and 2006. Buildout of the proposed LBNL and UC Berkeley LRDPs would take place mostly after 2006. Most construction-related traffic effects of these projects, then, would be staggered over a period of several years.

Construction traffic generated by the proposed NEQSS and UC Berkeley LRDP development would increase truck and heavy equipment vehicles and staging along Hearst Avenue and Gayley Road, two prime access routes to LBNL's main Blackberry Gate entrance. These routes would be further used by construction-related traffic accessing the LBNL site. Because LBNL would only use those routes for access to Berkeley Lab and not for staging purposes, and because LBNL can accommodate parking of heavy equipment on site and thus would not require daily commuting of heavy construction vehicles, and due to the fact that LBNL currently intends to reuse excavated material on-site (thus sparing truck trips necessary to provide and/or dispose of excavation fill), and because the Propose Action construction would be staged during generally different time periods than the City and UCB Campus projects, LBNL would represent only a minor contribution to construction traffic related impacts on these roadways, and within the levels anticipated and discussed in the 1997 Addendum.

Operational traffic from the Proposed Project would be distributed over a vide commute period (and would not be as concentrated during the peak hour as would be typically expected of office workers, for example) and would be further distributed over LBNL's three entrance gates. The proposed 50X Building project would not add to new traffic burdens at LBNL as it would draw exclusively on existing on-site workers. The proposed NEQSS and other UCB Campus and City projects would be expected to add incrementally to traffic in the area that leads to LBNL's Blackberry Canyon entrance (but not likely the other two entrances), although the Proposed Project would not likely pose a considerable contribution to any peak-hour commute impacts in concert with them. In addition, the Proposed Project is consistent with the LRDP and LRDP EIR, as amended, which addressed cumulative traffic and circulation impacts associated with LBNL growth.

Utilities/Energy

The Building 50X project, NEQSS, and other City and UCB Campus projects would be expected to increase demand for regional utilities and energy provision. However, these utilities are managed to accommodate region-wide growth and demand increase; these projects would be expected to fit within this long-term planning. Demand for utilities for all projects combined would not represent a substantial increase in demand for regional providers and would thus not be cumulatively significant. LBNL, UC Berkeley, and the City of Berkeley all encourage or mandate water and energy saving devices and practices. In addition, the Proposed Project is consistent with the LRDP and LRDP EIR, as amended, which addressed cumulative utilities/energy impacts associated with LBNL growth.

---

18. MANDATORY FINDINGS OF SIGNIFICANCE

Discussion:

a,b,c) With the mitigation measures described in this environmental assessment, the Proposed Project would not have a cumulatively considerable impact on persons, habitats, or endangered plants or animals. Because the project is located in a secured area, and is not accessible to nearby residents, and because both the Oakland and Berkeley General Plans control development in the vicinity of the site, the project would not by itself result in additional development that would increase the nearby residential population.

19. SUMMARY OF MITIGATION MEASURES APPLIED TO PROPOSED PROJECT

Project-Specific Mitigation Measures

Mitigation Measure
Biological Resources:
Molecular Foundry Mitigation Measure 1:
Prior to the initiation of excavation, construction, or vehicle operation, the project area shall be surveyed by a designated monitor, trained in Alameda whipsnake identification and ecology by a qualified biologist, to ensure that no Alameda whipsnakes are present. This survey shall not be intended to be a protocol-level survey, but rather one designed to verify that no snakes are actually on site.
Molecular Foundry Mitigation Measure 2:
All on-site workers shall attend an Alameda whipsnake information session conducted by the designated monitor. This session shall cover identification of the species and procedures to be followed if an individual is found on site.
Molecular Foundry Mitigation Measure 3:
All lay-down and deposition areas shall be inspected each morning by the designated monitor to ensure that Alameda whipsnakes are not present. All construction activities that take place on the ground shall be performed in daylight hours. Vehicle speed on site shall not exceed 15 miles per hour. Construction materials, soil, construction debris, or other material shall be deposited only on areas where vegetation has been mowed and any snakes present would be readily visible.
Molecular Foundry Mitigation Measure 4:
The site is subject to annual vegetation management involving the close-cropping of all grasses and ground cover on the project area; this management shall be done prior to initiation of construction. Re-mowing shall be done if grass or other vegetation on the project site becomes high enough to conceal whipsnakes during the construction period.
Cultural Resources
Molecular Foundry Mitigation Measure 5:
If an archaeological and paleontological artifact were discovered on-site during construction, all activities within a 50-foot radius would be halted and a qualified archaeological/paleontological monitor would be summoned within 24 hours to inspect the site. If the find were determined to be significant and merit formal recording or data collection, time and funding would be required to salvage the material. Any archaeologically important data recovered during monitoring would be cleaned, catalogued, and analyzed, with the results presented in a report of finding that satisfies professional standards.

Existing Mitigation Measures from LRDP EIR, as amended, to be applied

Aesthetic Resources
Mitigation Measure III-F-1a:
Buildings will occupy as limited a footprint as feasible. They will incorporate features that enhance flexibility and future versatility.
Mitigation Measure III-F-1:
Buildings will be planned to blend with their surroundings and be appropriately landscaped. Planned objectives will be for new buildings to retain and enhance long distance view corridors and not to compromise views from existing homes. New buildings will generally be low-rise construction.

Mitigation Measure III-F-2:
Any new facilities will not use reflective exterior wall materials or reflective glass, to mitigate the potential impacts of light and glare.

Mitigation Measure III-D-2a:

Revegetation of disturbed areas, including slope stabilization sites, using native shrubs, trees, and grasses will be included as part of all new projects.

Air Quality

Mitigation Measure III-J-1:

Construction contract specifications would require that during construction exposed surfaces would be wetted twice daily or as needed to reduce dust emissions. In addition, contract specifications would require covering of excavated materials.

Mitigation Measure III-J-2:

LBNL will design building ventilation systems to minimize emission of criteria air pollutants following compliance with all applicable regulatory requirements (e.g., NSR).

Biological Resources

Mitigation Measure III-D-2a:

Revegetation of disturbed areas, including slope stabilization sites, using native shrubs, trees, and grasses will be included as a part of all new projects.

Mitigation Measure III-D-2b:

Invasion of opportunistic colonizer trees and shrubs will be controlled. A maintenance program for controlling further establishment of eucalyptus, green wattle acacia, French broom, cotoneaster, and other opportunistic colonizer shrubs and trees in disturbed areas on-site will be undertaken. Herbicides will not be used for this purpose.

Mitigation Measure III-D-2c:

Removal of native trees and shrubs will be minimized. (To the greatest extent possible, the removal of large coast live oak, California bay, and Monterey pine trees will be avoided.)

Mitigation Measure III-D-2d:

Disturbance to the site perimeter buffer zones will be minimized.

Mitigation Measure III-D-2e:

LBNL activity and encroachment in Blackberry Canyon will be minimized.

Geological Resources

Mitigation Measure III-B-1:

Geologic and soils studies will be undertaken during the design phase of each LBNL building project. Recommendations contained in those studies would be followed to ensure that the effects of landsliding, lurching, and liquefaction potential will not represent a significant adverse impact during a seismic event.

Mitigation Measure III-B-2a:

Excavation and earth moving will be designed for stability, and accomplished during the dry season when feasible. Drainage will be arranged to minimize silting, erosion, and landsliding. Upon completion, all land will be restored, covering exposed earth with planting.

Mitigation Measure III-B-2b:

Foundations for proposed structures will be designed in accordance with geologic and soils engineering recommendations to

minimize the long-term possibilities of landslide.

Mitigation Measure III-B-2c:

Excavations will be shored as required by law to preclude minor short-term landslides during construction.

Mitigation Measure III-B-2d:

Revegetation of disturbed areas, including slope stabilization sites, using native shrubs, trees and grasses will be included as part of all new projects.

Hazardous Materials

Mitigation Measure IV-K-1:

LBNL will prepare an annual self-assessment summary report. The report will summarize environment, health, and safety program activities, and identify any areas where LBNL is not in compliance with laws and regulations governing hazardous materials, hazardous waste, hazardous materials transportation, regulated building components, worker safety, emergency response, and remediation activities.

Mitigation Measure IV-K-2a:

Prior to shipping any hazardous materials to any hazardous waste treatment, storage, or disposal facility, LBNL will confirm that the facility is licensed to receive the type of waste LBNL is proposing to ship to that facility.

Mitigation Measure IV-K-2b:

LBNL will continue its waste minimization programs and strive to identify new and innovative methods to minimize hazardous waste generated by LNBL activities.

Mitigation Measure IV-K-3:

LBNL will require hazardous waste haulers to provide evidence that they are appropriately licensed to transport the type of wastes being shipped from LBNL.

Mitigation Measure IV-K-5:

In addition to implementation of the numerous employee communication and training requirements included in regulatory programs, LBNL will undertake the following additional measures as ongoing reminders to workers of health and safety requirements:

Posting, in areas where hazardous materials are handled, of phone numbers of LBNL offices which can assist in proper handling procedures and emergency response information.

Continuing to post “Emergency Response and Evacuation Plans” in all LBNL buildings.

Continuing to post all sinks in areas where hazardous materials are handled with signs reminding users that hazardous materials cannot be poured down the drain.

Continuing to post dumpsters and central trash collection areas where hazardous materials are handled with signs reminding users that hazardous wastes cannot be disposed of as trash.

Mitigation Measure IV-K-6:

LBNL will update its emergency preparedness and response program on an annual basis, and will provide copies of this program to local emergency response agencies and to members of the public upon request.

Hydrology and Water Quality

Mitigation Measure III-B-2a:

Excavation and earth moving will be designed for stability, and accomplished during the dry season when feasible. Drainage will be arranged to minimize silting, erosion, and landsliding. Upon completion, the land will be restored, covering exposed earth with planting.

Mitigation Measure III-B-2d:

Revegetation of disturbed areas, including slope stabilization sites, using native shrubs, trees, and grasses, will be included as part of all new projects.

Mitigation Measure III-C-2:

Each individual project will continue to be designed and constructed with adequate storm drainage facilities to collect surface water from roofs, sidewalks, parking lots and other surfaces and deliver it into existing channels which have adequate capacity to handle the flow.

Land Use and Plans

Mitigation Measure III-G-2:

Buildings proposed for development at LBNL will follow the design guidelines contained in the LBNL LRDP, as amended.

Noise

Mitigation Measure III-K-1:

Projected noise levels will be compared with ambient noise levels and the Berkeley Noise Ordinance limits, or other applicable regulations. Acoustical performance standards would be included in future construction documents. LBNL will continue to design, construct, and operate buildings and building equipment taking into account measures to reduce the potential for excessive noise transmission.

Mitigation Measure III-K-2:

Noise-generating construction equipment will be located as far as possible from existing buildings. If necessary, windows of laboratories or offices will be temporarily covered to reduce interior noise levels on-site.

Traffic and Parking

Mitigation Measure III-I-Ia:

Discourage single-occupant-vehicle use and encourage the use of other transportation options. LBNL will continue to implement its Transportation System Management (TSM) Program. The specific features of this program include:

- Establishing transportation modal-split goals for LBNL which will result in a reduction in the number and percentage of single-occupant automobiles being driven to and from LBNL;
- Assigning a transportation planner to coordinate the design and implementation of TSM programs;
- Promoting carpools by creating a carpool matching program;
- Providing preferential carpool parking;
- Developing a vanpooling program through funding support of Berkeley TRIPS;
- Permitting staggered (flex-time) work hours;
- Developing an annual monitoring program to evaluate the programs in relation to established goals and identify new elements which should be added to the program;
- Promoting the TSM programs by giving orientation briefings to new employees, providing information aids to be distributed to LBNL employees, organizing an information center, and selling transit tickets on-site at LNBL;
- Reviewing LBNL shuttle service and transit interface facilities; and
- Reviewing bicycle routes and storage facilities for improvements.

Mitigation Measure III-I-1b:

LBNL will conduct bi-annual peak hour traffic counts in and around LBNL. In particular, the bi-annual count will include the Gayley Road corridor between Hearst Avenue and Bancroft/Piedmont.

Mitigation Measure III-I-1c:

If and at such time as the level of service at intersections along the Gayley Road corridor reaches "D," a review of necessary improvements will be conducted with UC Berkeley;

Mitigation Measure III-I-1d:

LBNL will pay for its fair share of allowable and necessary signalization improvements along the Gayley Road corridor proportional to LBNL's share of increases in traffic.

Mitigation Measure III-I-1e:

Details of the Gayley Road corridor improvements, including environmental assessment of the improvements, will be reviewed at the time the thresholds are reached.

Mitigation Measure III-I-2:

LBNL will continue to implement and monitor the implementation of its Transportation System Management Program.

Utilities

Mitigation Measure III-M-1:

Prior to construction of any project which may add significant sewer load to the city sanitary sewer system, LBNL will investigate the potential impact of the project on the city system. LBNL will identify mitigation measures to accommodate the sewer load if the impact investigation indicates that the city system could not accommodate the additional sewage. LBNL will reimburse the City of Berkeley and/or EBMUD for its fair share of allowable and necessary sewer improvement capital costs which are needed to accommodate increased demand and mitigate sewer impacts resulting from implementation of the LBNL LRDP.